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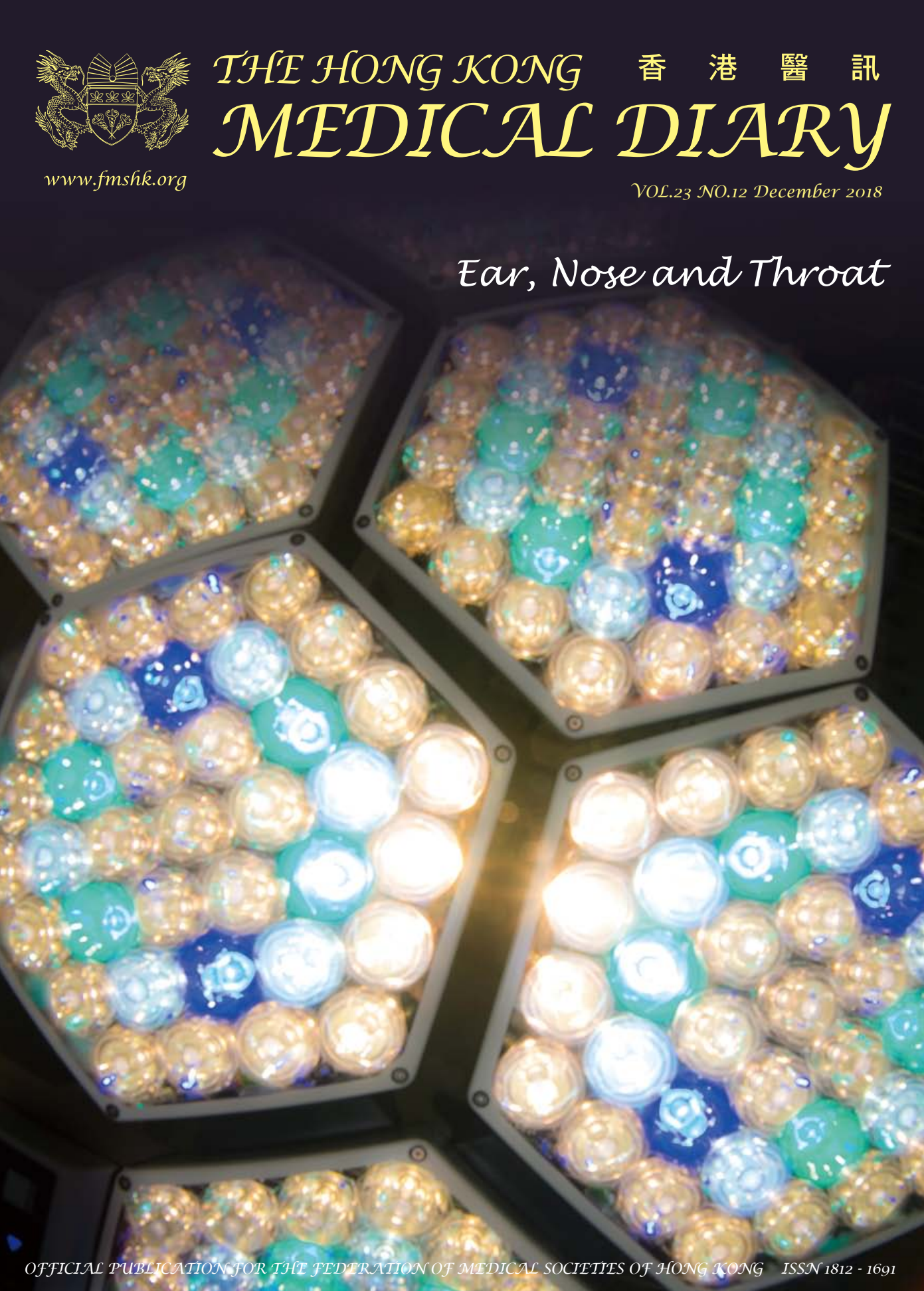

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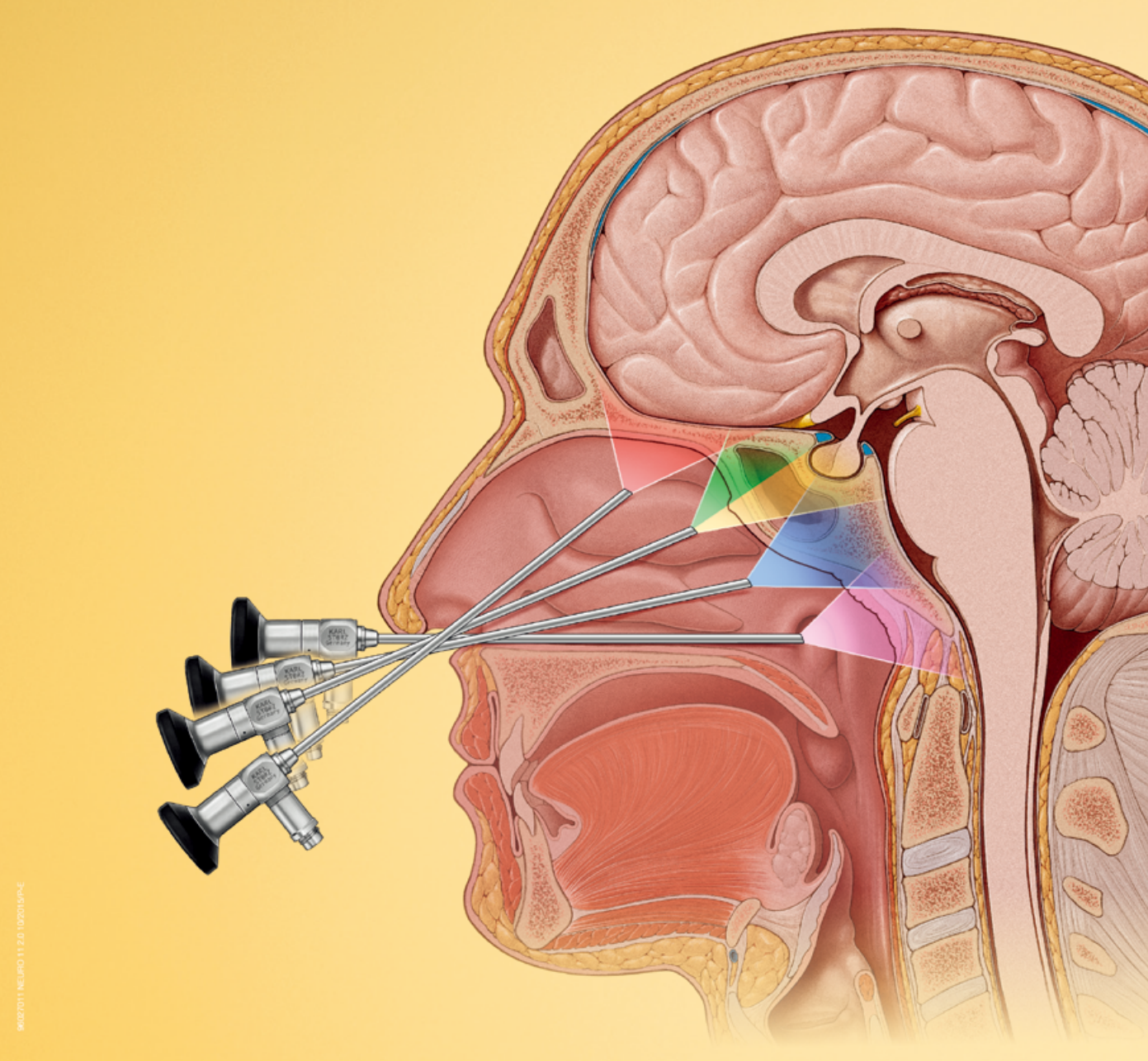

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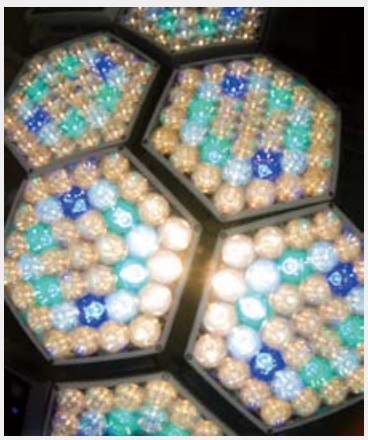

Still Life at Work

This picture was taken in an operation theatre. A fisheye lens was used for its unusual perspective. A blurred effect and a high-key tone inspire a classy and artistic feeling.

This ordinary operation theatre lamp is indeed stylish, and yet its beauty is usually left unnoticed. Similarly, doctors are sometimes too busy to see beautiful things, share joy with friends and love intimate people around us. What a pity!

Let me share a quote by Socrates – "Beware of barrenness of a busy life".

Dr Chiu-wing LAM
MBBS (HK), FHKCORL, FHKAM (ORL)

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Editorial

Dr Birgitta Yee-hang WONG

MBBS (HK), MRCSEd, FRCSEd (ORL), FHKCORL, FHKAM(ORL)

Specialist in Otorhinolaryngology
Chief of Service and Consultant
Honorary Clinical Associate Professor
Department of Ear, Nose and Throat, Queen Mary Hospital

Editors

Dr Birgitta Yee-hang WONG

I would like to express my deepest "thank you" to the Editorial Board of the Federation of Medical Societies of Hong Kong for inviting me to be the Editor of this Ear, Nose and Throat issue. The theme for our current edition is 'Advances in ENT'. I feel privileged to have this wonderful opportunity to invite a team of dedicated, experienced, innovative and energetic Otorhinolaryngologists to contribute and share their tremendous experience in their field of interests. Dr Raymond Tsang will show us the application of Surgical Robots in the treatment of Head and Neck Tumours. He will highlight the transoral robotic surgery and robotic neck surgeries. Dr Siu-kwan Ng will enlighten us on a minimally invasive technique for managing obstructive salivary gland diseases with the sialendoscopy, which is gaining an expanding role in the treatment of radio-active iodine sialadenitis and juvenile recurrent parotitis. Dr Peter Ku and Dr Osan Ho will discuss the new technique to combine autologous costal cartilage with Medpor for ear reconstruction for patients suffering from microtia. This approach enhances the aesthetic outcome while requiring minimal quantity of costal cartilage from children. Dr Amy Cheung will review current advances in Otology with special focus on the application of endoscopic ear surgery, its advantages and disadvantages. Dr Hing-sun Chan will share his special hobby – a 15 years' experience of flying. He will show us the fun and challenge in operating a fixed-wing aircraft versus a helicopter. Moreover, flying an aircraft is somewhat similar to carrying out an operation as a surgeon. You need the skills, determination and decisiveness in emergency situations. This brings us to our interesting cover photo. Dr Chiu-wing Lam, combining his photographic talent and innovation, has contributed a photo named 'Still life at work' to illustrate the beauty around us which may be left unnoticed in our busy everyday life.

Finally, I wish you and your family a Merry Christmas and a Happy New Year of 2019!

Sialendoscopy - A New Paradigm in the Management of Obstructive Salivary Gland Diseases

Dr Siu-kwan NG

MBChB, FCSHK, FHKCORL, FRCS.Ed(ORL), FHKAM

Specialist in Otorhinolaryngology
Consultant, Department of Ear, Nose and Throat Surgery, Prince of Wales Hospital

Dr Siu-kwan NG

INTRODUCTION

Obstructive salivary gland diseases are under-recognised and are frequently misdiagnosed as recurrent sialadenitis or even "recurrent mumps".

Salivary ductal stones and strictures are two major forms of obstructive salivary gland diseases. Affected patients usually present with recurrent painful swelling of the affected gland. The swelling is often precipitated by eating. Nevertheless, it also commonly takes place without any salivatory stimulus. Each attack typically lasts for a few hours. If the ductal obstruction persists, it can lead to persistent swelling and even secondary infection.

SALIVARY STONES

The precise cause of salivary stones is not known. It is believed that a prolonged period of salivary inactivity plays an important role.[1] Therefore, conditions contributing to less saliva production are potential risk factors for salivary stones, such as dehydration and medications that reduce salivary production.

Stones are more common in the submandibular gland than the parotid gland. This may be related to the ascending course of the submandibular duct (Fig. 1) and the thicker submandibular saliva, resulting in a higher risk of salivary stasis.

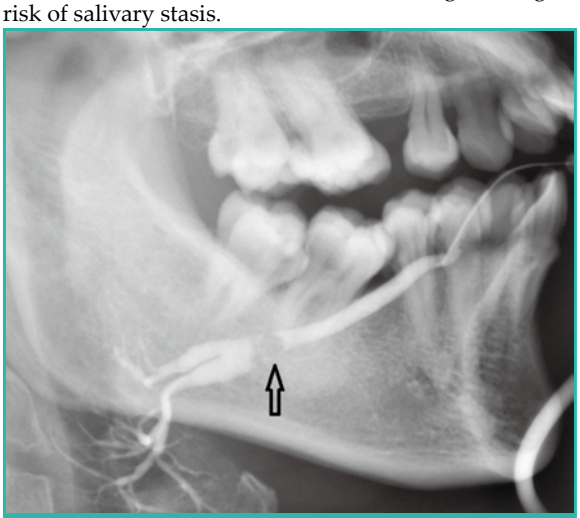

Fig. 1: Submandibular sialography. Note the ascending course of the submandibular duct and the filling defect due to a stone (arrow)

SALIVARY DUCTAL STRICTURES

Salivary ductal strictures are more common in the parotid than the submandibular gland. Around 70-75% of stenoses are located in the parotid and 25-30% in the submandibular ductal systems. It may occur as a complication of a pre-existing calculus or following trauma to the ductal wall. It can also be related to ascending infection from the oral cavity, which is predisposed by reduced salivary flow.[2]

MANAGEMENT OF OBSTRUCTIVE SALIVARY GLAND DISEASES

Stones that are located at or very close to the ductal opening can be readily removed transorally (Fig. 2). Ductal opening stenosis is treated by papillotomy and stenting. For deeper-located lesions (which are more common), the traditional treatment is surgical excision of the involved gland. This approach necessitates an external surgical scar and carries risks of wound complications and nearby neural injury (e.g. facial nerve). The other downside is the sacrifice of a functional organ when in fact the disease is located more distally.

The advent of sialendoscopy over the past 2 decades has substantially improved our capability to deal with these conditions in a minimally invasive and targeted manner.

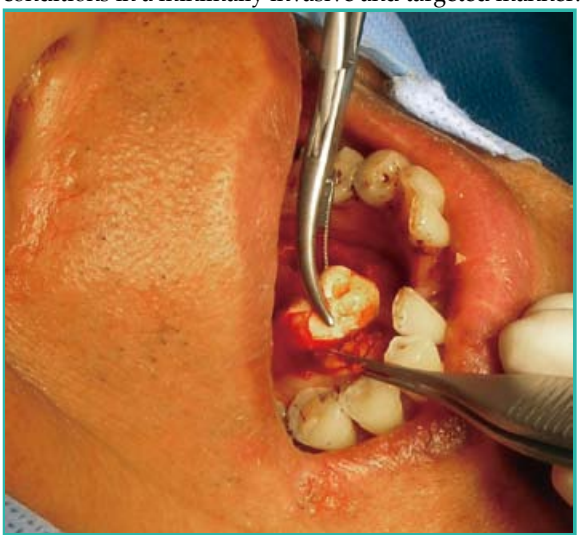

Fig. 2: Transoral removal of a big stone near the right submandibular ductal opening under local anaesthesia

WHAT IS SIALENDOSCOPY?

Diagnostic sialendoscopy is the endoscopic examination of the salivary ductal systems via their natural ductal orifices in the oral cavity. It involves serial dilatations of the respective openings followed by the insertion of a sialendoscope, a very thin semi-rigid endoscope with a diameter ranging from 0.9 to 1.6mm (Fig. 3a, 3b). Most sialendoscopes are fitted with a working channel (Fig. 4a, 4b) through which tools can be passed to the ductal lumen during interventional sialendoscopy. The obstructive lesions therefore are treated under visual control.

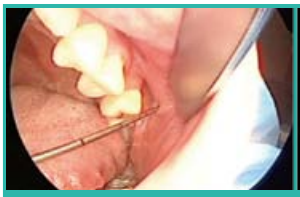

Fig. 3a: Left parotid sialendoscopy

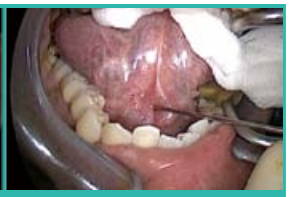

Fig. 3b: Right submandibular sialendoscopy

Fig. 4a: Marchal all-in-one sialendoscope (Arrow: working channel)

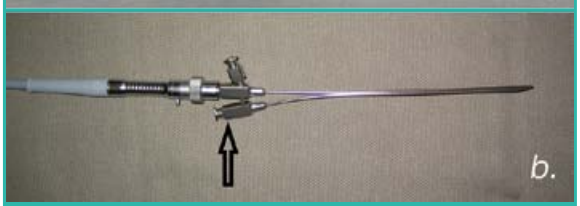

Fig. 4b: Modular sialendoscope, optic fibre incorporated into a changeable sheath (Arrow: working channel)

DIAGNOSTIC SIALENDOSCOPY

Traditionally, the salivary ductal system is examined by sialography (Fig. 1). Modern non-invasive imaging techniques of USG, MRI and CT have largely made this technique obsolete.

Ultrasonography (USG) is the most useful first line radiological investigation for salivary gland problems. It is non-invasive, radiation-free and low cost. It is helpful to rule out space-occupying lesions and to identify stones and non-stone obstructions. However, false negative findings are quite common. USG can miss mildly mineralised stones or calculi less than 3 mm in diameter.[3, 4] For non-stone obstructions, the sonographic diagnosis relies on the presence of dilated ducts, but they may not be apparent in between attacks or in cases of diffuse ductal stenosis.

Sialendoscopy provides direct endoscopic views of the ductal lumen (Fig. 5) and is therefore very accurate in identifying luminal lesions real-time. The 3 main obstructive findings are stones (Fig. 6), strictures (Fig. 7) and mucus plugs.

In a local study, Ng et al found that sialendoscopy was more sensitive than conventional imaging modalities in diagnosing obstructive salivary ductal lesions. In patients with suggestive symptoms, the chance of finding obstructive pathologies is nearly 95%.[5] A similar finding was reported by Koch et al in an earlier study in which 89.3% (92 of 103 patients) of symptomatic patients were found to have pathology on sialendoscopy despite prior negative USG.[3]

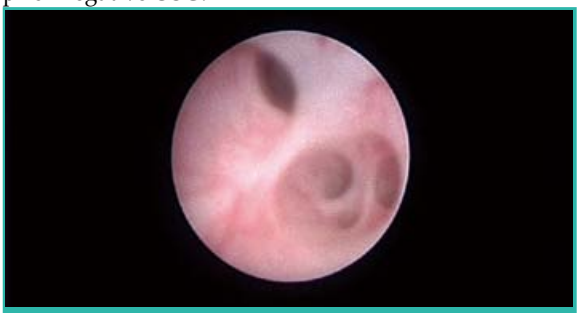

Fig. 5: Normal salivary duct and its intraparenchymal branches

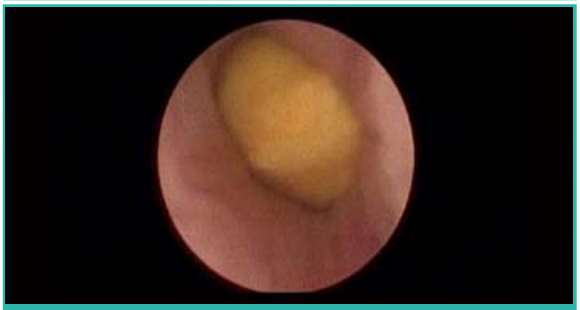

Fig. 6: Salivary ductal stone

Fig. 7: Severe salivary ductal stricture

INTERVENTIONAL SIALENDOSCOPY

The working channel of the sialendoscopes allows passage of basket catheters, forceps, laser probes, etc. to the ductal lumen for required interventions.

a. Salivary ductal stones

For free floating stones: it can be retrieved by the basket and be pulled to the ductal papilla where a small cut would let out the stone.

For deeply impacted big stones, in selected cases, they can be fragmented (e.g. by a laser probe) into smaller fragments and then sequentially retrieved by a basket (Fig. 8, 9). However, in the majority of cases, the proximal stones are removed by a combined sialendoscopic-open approach. That is, the stone is firstly engaged by the sialendoscopic basket. It is then pulled to a more favourable position for transoral open extraction (Fig. 10). For big proximal parotid stones, the light of the sialendoscope can be used as a guide to facilitate open transcutaneous exploration (Fig. 11). Nevertheless, for patients with deep-seated stones and difficult anatomy, salivary gland excision is still needed.

Fig. 8: Stone in Fig. 6 fragmented by laser

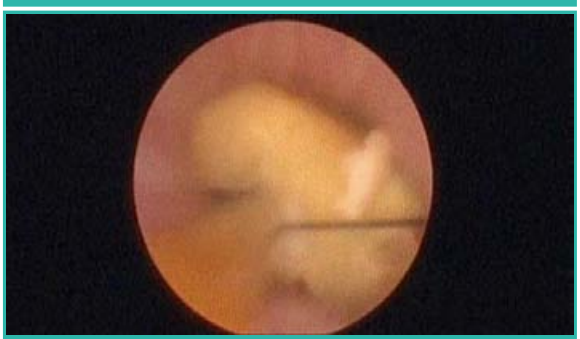

Fig. 9: Stone fragments removed by sialendoscopic basket

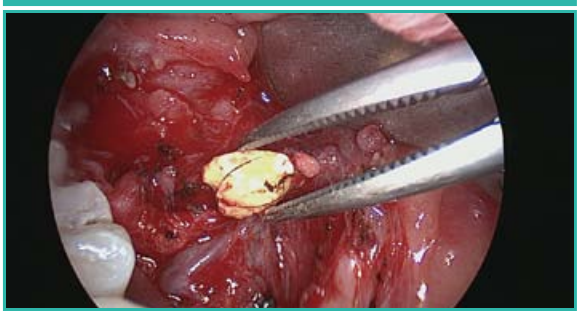

Fig. 10: Combined sialendoscopic/ open approach for deep seated big submandibular stone

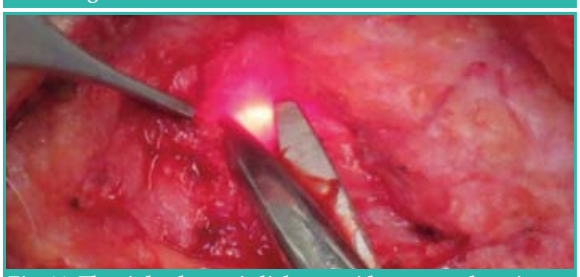

Fig. 11: The sialendoscopic light to guide open exploration

b. Salivary ductal strictures

Strictures can be dilated endoscopically. The dilatation can be mostly achieved by the sialendoscope itself coupled with successive sizes of the external sheath with the aid of a guide wire (Fig. 12a, 12b).

Symptom improvement can be achieved in over 80% of patients in various series.[6, 7, 8] However, on longterm follow up, Koch et al noted 50% of patients would have recurrent symptoms, although only 19.5% complained of recurrent pain, and the visual analog scale (VAS) scores for recurrent symptoms and pain were low.[9]

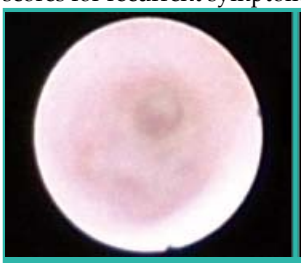

Fig. 12a: Near complete ductal stenosis

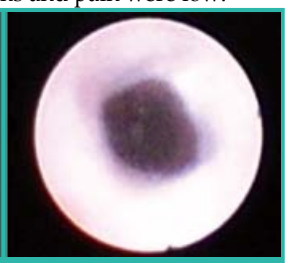

Fig. 12b: The same stenosis after dilatation

c. Mucus plugs

Mucus plugs are mostly associated with stones and strictures and are removed by flushing or a sialendoscopic basket.

d. Radioactive iodine-induced sialadenitis

Radioactive iodine-induced sialadenitis (RAIS) is not rare. Besides the thyroid gland, the salivary gland is also subject to significant radiation during radioactive iodine treatment. Up to 24% of the administered dose of radioiodine passes through saliva. The ductal cells of the salivary glands concentrate iodine in a tissue-to-serum ratio of 50:1. Duct stenosis and mucous plugs were observed in about 85% of affected patients, supporting the role of ductal obstruction in the pathophysiology of radioiodine sialadenitis. Recently, sialendoscopy has been applied to treat RAIS patients who are unresponsive to standard medical treatments. In a recent systematic review involving 122 patients who underwent sialendoscopic treatment, nearly 90% of patients experienced complete or partial resolution of sialadenitis recurrences without any major adverse event.[10] Nevertheless, because of the lack of objective measures and the absence of control groups in those studies, the actual benefit over the natural course of the illness is not completely clear.

e. Juvenile recurrent parotitis

Juvenile recurrent parotitis (JRP) is a disease that affects children without a definite aetiology. The onset is typically between the ages of 3-6 years and can continue into puberty, when the disease tends to resolve. Patients suffer from recurrent parotitis that may be associated with fever. The acute episodes are usually treated by analgesics, hydration and antibiotics. Therapeutic sialendoscopies have been attempted to reduce the recurrent attacks by washing out intraductal debris and reopening the stenotic areas. While there are some studies showing its usefulness,[11] these studies suffer drawbacks of being level 3 and 4 evidence, with small population size and short follow-up.

COMPLICATIONS

Complications of sialendoscopy are very uncommon.[12,13] They include ductal wall perforation, stuck basket, ductal avulsion, intraductal breakage of a miniaturised instrument, ranula, temporary/ permanent lingual or facial nerve damage. Salivary ductal perforations mostly heal without sequalae.

CONCLUSION

Sialendoscopy is a minimally invasive technique for managing obstructive salivary gland diseases. Because of its higher sensitivity, diagnostic sialendoscopy is indicated in most patients with suggestive obstructive symptoms, even when radiological investigations are negative.

Sialendoscopy plays an established role in treating ductal stones and strictures, and significantly reduces the need for salivary gland excision. Sialendoscopy may also be helpful in treating radio-active iodine sialadenitis or juvenile recurrent parotitis, but the apparent effectiveness requires further confirmation.

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Surgical Reconstruction of Microtia

Dr Osan YM HO
MBChB(CUHK), FRCSEd(ORL), FHKCORL, FHKAM(ORL), DCH (Ire), DPD (Cardiff), MScPD (Cardiff)
Associate Consultant
Honorary Clinical Assistant Professor
Department of Otorhinolaryngology – Head and Neck Surgery
United Christian Hospital and Tseung Kwan O Hospital
The Chinese University of Hong Kong

Dr Peter KM KU
MBChB(CUHK), FRCSEd(ORL), FHKCORL, FHKAM(ORL), DPD (Cardiff), MScPD (Cardiff)
Consultant
Honorary Clinical Associate Professor
Chief of Facial Plastic Clinic
Department of Otorhinolaryngology – Head and Neck Surgery
United Christian Hospital and Tseung Kwan O Hospital
The Chinese University of Hong Kong

Dr Osan YM HO Dr Peter KM KU

INTRODUCTION

Microtia occurs with an incidence of 1 to 10 per 10,000 births.[1–3] Most of the cases are sporadic. This condition can be associated with congenital syndromes such as Goldenhar and Treacher Collins.[4] The right side is more commonly affected than the left side. Boys have a 30% higher affected rate than girls. Microtia is more prevalent in Hispanics and Asians than blacks and whites.[5] Aural atresia is associated with microtia in 75% of these patients.[6]

The cause of microtia is unknown. The most prevailing theory is in utero tissue ischaemia secondary to obliteration of the stapedial artery or haemorrhage into the ear.[7] Certain drugs such as thalidomide, isotretinoin and retinoic acid have been associated with the development of microtia.[8]

Microtia can lead to functional and aesthetic problems. Patients who have microtia associated with canal atresia and middle ear deformities would also have conductive hearing loss. Deformed ears in these patients may cause difficulty in wearing eye glasses or hearing aids. Psychologically, microtia causes social embarrassment and low self-esteem. This can lead to introverted personality and social isolation.[9] Some studies showed that microtia patients are more prone to depression.[10]

Management of microtia requires a multidisciplinary approach. In United Christian Hospital, the management team involves otologists, facial plastic surgeons, audiologists, anaesthetists, specialist nurses, prosthetics, speech therapists and occupational therapists. Good family support and doctor-patient relationship are also the key elements for success. In our centre, the otologists and audiologists will counsel the patients and their parents about the different methods of hearing rehabilitation. Priority is given to patients with bilateral microtia, as their hearing impairment has to be managed as early as possible in order to facilitate normal speech development and learning ability.

Many non-surgical (Headband bone conduction devices and Spectacle bone conductive hearing aids) and surgical options (canalplasty, Percutaneous Bone Anchoring Hearing Aids, Transcutaneous Bone Anchoring Hearing Aids, Bonebridge and Vibrant Soundbridge) are available. The treatment plan can be tailor-made for individual patients according to their clinical conditions and expectations. [11,12]

HISTORICAL EVOLUTION OF MICROTIA RECONSTRUCTION

Microtia reconstruction is a challenging operation performed by reconstructive surgeons. The first reconstructive surgery in microtia can be dated back to the 1920s in which the auricular framework was made by using autologous costal cartilage. Later, alloplastic implants and prosthetic ears were introduced as additional options for patients to select.

Tanzer et al published a paper using autologous costal cartilage for reconstruction of the auricle in 1959 and pioneered the technique of autologous ear reconstruction.[13] Brent modified Tanzer's technique in treating patients with auricular malformations since the 1970s.[14] Nagata et al then further modified the technique from 4 stages into 2 stages. The first stage of the operation is fabrication and grafting of the three dimensional costal cartilage framework and the second stage is to produce projection of the reconstructed auricle.[15] The outcomes of reconstruction are largely surgeon-dependent and the surgery demands a long learning curve. Currently the use of autologous costal cartilage is the gold standard for microtia reconstruction.

Porous polyethylene (Medpor) is a synthetic biocompatible material. Reinisch et al advocated its use as an alternative to costal cartilage for ear reconstruction in 1994.[16] A total of 116 patients over a span of 8 years showed an initial high complication rate. The failure rate has been lowered by using a temporoparietal flap (TPF) to wrap the implant. Medpor reconstruction allows one stage surgery at younger age and does not involve donor-site morbidity. However, Medpor is a foreign material and any extrusion of the implant may require surgical removal as the exposed area will fail to heal spontaneously.

An osseointegrated anchoring device uses a titanium fixture to provide a direct structural connection between the temporal bone and a load carrying implant. Tjellström et al first described the placement of osseointegrated implants to retain auricular prostheses in 1981.[17] Thorne and Brecht et al[18] suggested the relative indications for prosthetic microtia reconstruction which included those with failed autologous reconstruction, significant soft-tissue/skeleton hypoplasia and those with low or unfavourable hairline. The prosthesis may need replacement every 2 to 5 years due to wear and tear of the implants. The skin/implant interface is prone to irritation and infection, and meticulous hygiene is of

utmost importance in managing the prosthetic ear. The only pitfall of prosthetic ear is the necessary removal of remnants of the involved ear, which may preclude future autologous reconstruction.

Although the ear will continue to grow until the age of ten, it has been established that 85 percent of ear development is attained by 3 years of age.[19] However, the costal cartilage is not of optimal condition as the material for reconstruction at this age. Brent and some other surgeons recommended ear reconstruction between ages of four and six.[20] Nagata suggested reconstruction with costal cartilage at the age of ten when the chest circumference is at least 60 cm at the level of the xiphoid. However, no local reference data are available to guide us with regard to the optimal age for reconstructive surgery. Therefore, we have performed a prospective study to investigate the growth of pinnas in local children (n=344). We found that at the age of seven to eight, boys' pinna lengths can achieve 87% and 93% in comparison with their fathers' and mothers' lengths of pinna respectively. For girls, the lengths of pinna can achieve 87% and 91% of their fathers' and mothers' lengths of pinna respectively. More importantly, children at age of 7-8 can better understand the treatment and cooperate with the healthcare provider for post-operative management. Therefore, based on our findings, the youngest age we prefer to be subjected to reconstructive ear surgery is eight years old.

SURGICAL TECHNIQUE

In our centre, we practise Nagata's Technique with modification by combining porous polyethylene (Medpor) to autologous costal cartilage as a hybrid auricular graft to reconstruct the microtia ear. By using this approach, only one piece of costal cartilage is adequate to reconstruct an auricular graft when the body of the graft is made mainly by the Medpor material. This allows surgery to be performed with least dependence on the condition of the costal cartilage and more importantly this allows patients with bilateral microtia to undergo reconstruction of both ears at the same surgical session just by harvesting 2 pieces of costal cartilage.

In the first stage of reconstructive surgery, the 7th costal cartilage is harvested from the right chest wall. The costal cartilage is usually adequate to construct the helix, antihelix, and tragus. If the 7th costal cartilage is not adequate in those patients with "large" auricles, one more piece of the 8th costal cartilage can be harvested. The cartilage is carved to form the helical rim, antihelix and tragus if needed and they are attached to an auricular body made by porous polyethylene with size and shape carved according to a 3-D template using the parameters from the normal opposite ear. All components are fixed together using stainless steel wires to form the hybrid auricular graft (Fig.1). Any redundant costal cartilage is cut into small pieces to be inserted back to the perichondrial pocket at the donor site. This helps to minimise the chest wall deformity after surgery. A skin incision is made with the splitting of the ear lobule and the incision is extended to the post-auricular skin (Fig. 2 and 3). All remnants of the auricular cartilage are removed except the tragus in the concha type of microtia. A subcutaneous skin pocket is created with meticulous haemostasis. A subcutaneous vascular pedicle near the floor of the concha bowl is preserved to optimise the blood supply of the skin flap. The hybrid auricular graft is then inserted into the pocket and the skin flap is draped on the auricular framework using suction pressure from a closed drain (Fig.4). Redundant skin, if present in the anterior crus helicis, is trimmed and the skin wound is sutured using non-absorbable sutures. A closed suction drain is left to remove old blood and to keep negative pressure allowing draping of the skin. It is removed on day 6-7 after operation.

The second stage of surgery aims at elevating the reconstructed auricle to match the projection of the normal opposite auricle. This is done at least 6 months after the first-stage surgery. A skin incision is made 1 cm posterior to the helical rim and the hybrid auricular graft together with its lateral skin is raised (Fig.5). A crescent shaped wedge of Medpor implant is carved and placed under the auricular graft to create projection of the pinna. A scalp incision is made in the temporal region to allow harvesting of a piece of temporoparietal flap, which is raised and flipped downward to cover the posterior surface of the auricular graft and the Medpor wedge (Fig.6 and 7). A full thickness skin graft is then harvested from the lower abdomen and placed on the temporoparietal flap (Fig 8).

During our 6 years' follow up, we encountered no single case of graft failure such as extrusion of the auricular graft. Minor skin necrosis was noted in a few patients and was managed conservatively, trimming with primary closure or local flap. All patients are satisfied with the aesthetic results of the reconstructed ear (Fig. 9A and 9B).

Fig. 1: Hybrid auricular graft consists of costal cartilage and Medpor implant

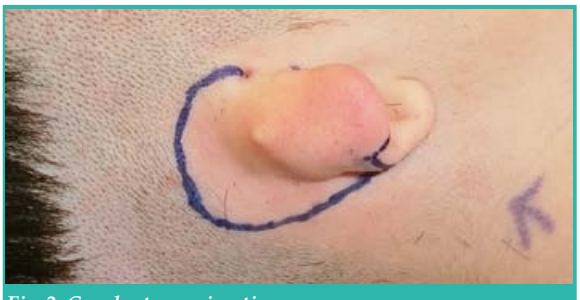

Fig. 2: Concha type microtia

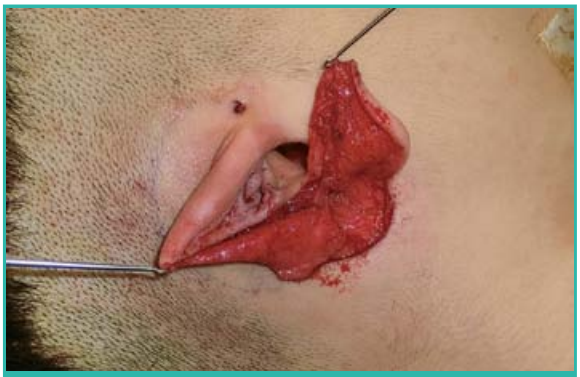

Fig. 3: Skin incision of stage 1 surgery in a concha type microtia

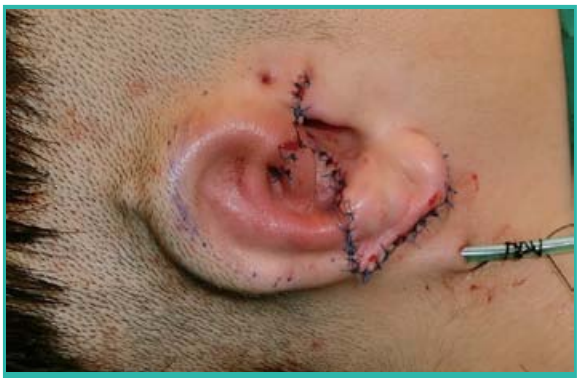

Fig. 4: Immediate post op photo of a stage 1 surgery

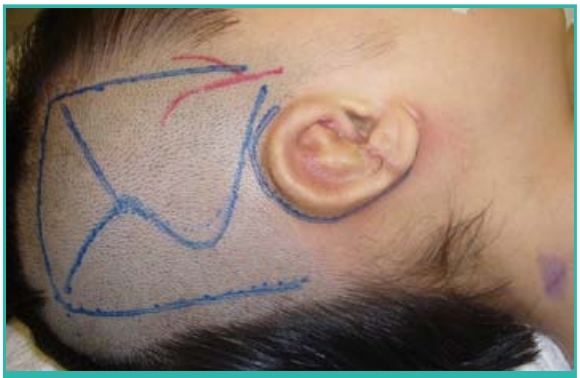

Fig. 5: Skin incisions of a stage 2 surgery

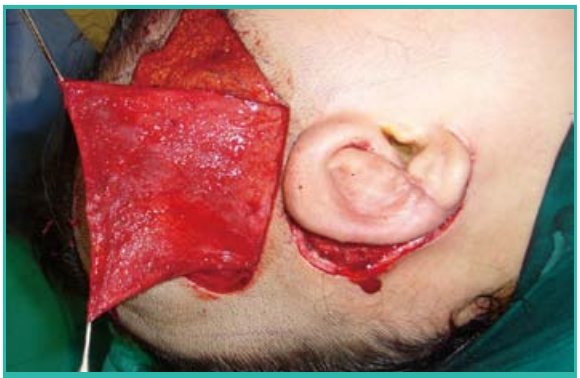

Fig. 6: Temporoparietal flap

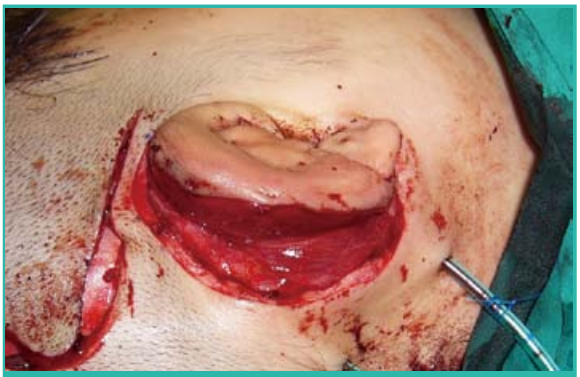

Fig. 7: Temporoparietal flap covering the posterior surface of the auricular graft

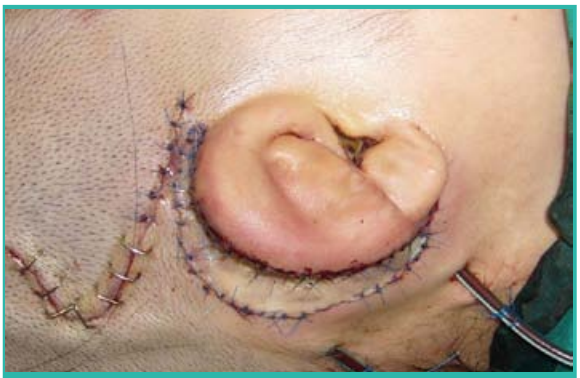

Fig. 8: Full thickness skin graft placed on the temporoparietal flap

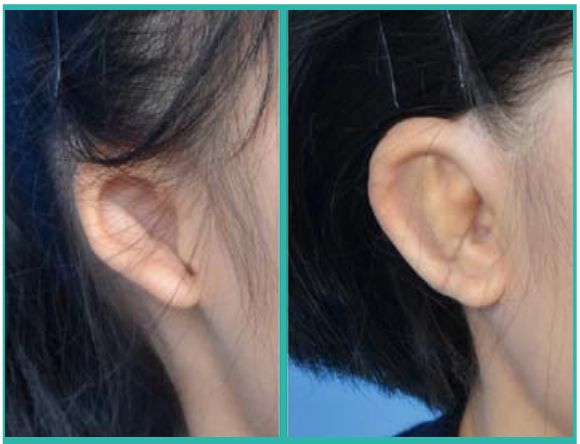

Fig. 9a: Pre-operative photo *Fig. 9b: Post-operative photo*

CONCLUSION

Microtia is a congenital condition that causes both functional and aesthetic problems to patients. The treatment plan should include hearing rehabilitation and ear reconstruction. Reconstruction for microtia is a challenging operation. Good surgical planning can optimise the surgical outcomes. Our technique to combine autologous costal cartilage with Medpor allows surgery to be performed in younger patients without jeopardising long-term safety and stability.

This approach may enhance the aesthetic outcome while using minimal quantity of costal cartilage. It is particularly useful in bilateral microtia as reconstruction can be performed simultaneously for both auricles while taking 2 pieces of costal cartilage on one side of the chest. The operating time and intraoperative morbidity can be reduced.

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Radiology Quiz

Dr Andrew CHENG

MBBS (HK) FRCR(UK)

Resident, Department of Radiology, Queen Mary Hospital

Dr Andrew CHENG

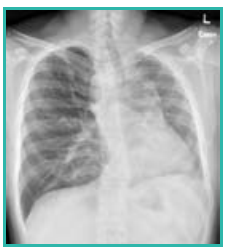


Fig. 1 Chest X-ray

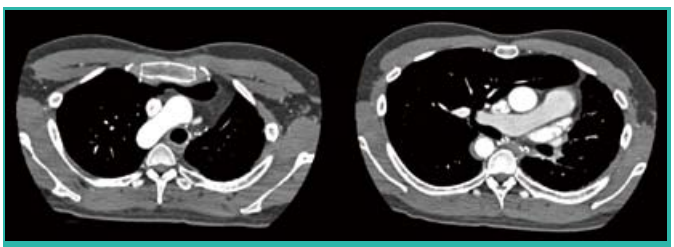


Fig. 2 Chest CT

A 37 year-old man presented with decreased exercise tolerance. Chest X-ray and Chest CT were performed.

Questions

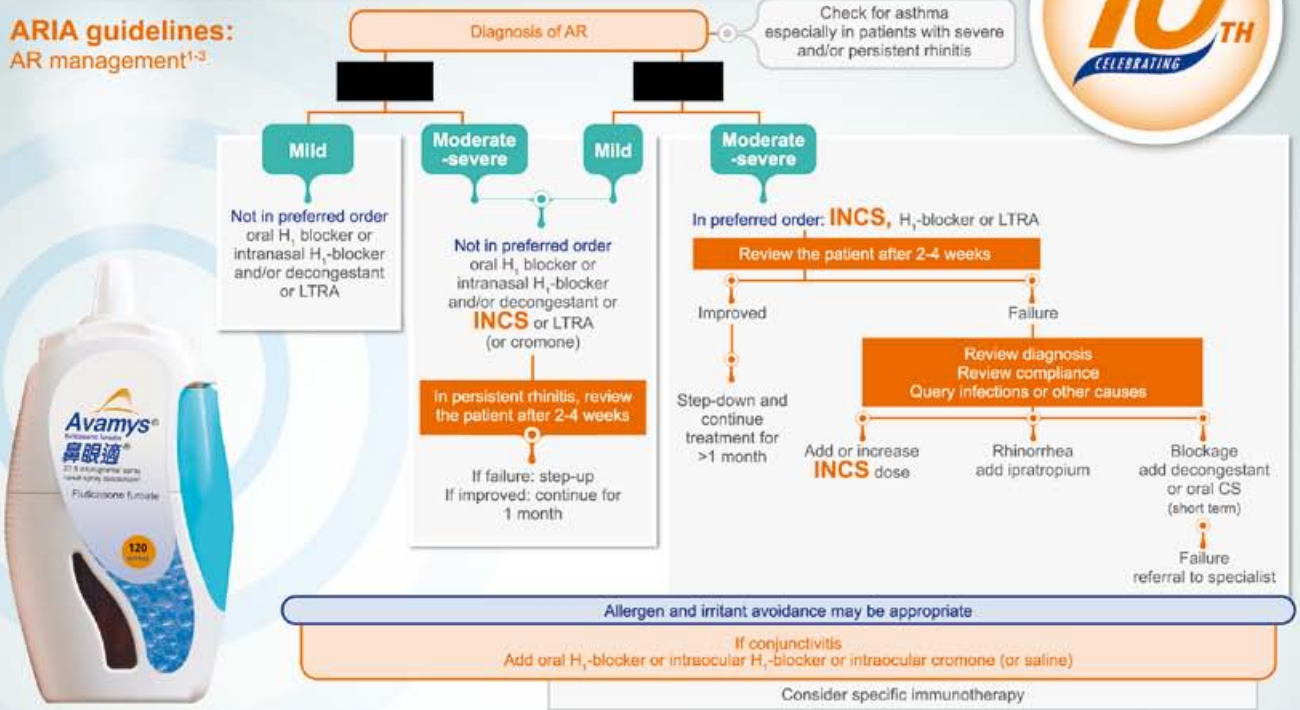
1. What are the CXR findings?
2. What are the chest CT findings?
3. What is the diagnosis? What is the origin of this disease?
4. What are the associations of this disease?
5. What are the complications of this disease?
6. What are the main differential diagnoses?

(See P.32 for answers)

Break Through Allergic Rhinitis with Avamys®

10TH CELEBRATING

ARIA guidelines:
AR management[1-3]



AR = allergic rhinitis. ARIA = Allergic Rhinitis and its Impact on Asthma. CS = corticosteroid. H_1 = histamine. INCS = intranasal corticosteroid. LTRA = leukotriene receptor antagonist.

Guidelines Recommendations on Intranasal Corticosteroids for Treatment of Allergic Rhinitis

Intranasal corticosteroids are the **first-line treatment** for moderate/severe disease, in particular in persistent rhinitis[1]

Intranasal corticosteroids are the **first-line therapy** for moderate-to-severe persistent symptoms[4]

An intranasal corticosteroid alone should be the **initial treatment** for AR with symptoms affecting QoL[5] (Grade A evidence*)

Intranasal steroids should be recommended for patients with AR symptoms affecting QoL[6] (Strong recommendation†)

*Grade A evidence: consistent, good-quality patient-oriented evidence.
†Strong recommendation: the benefits of the recommended approach clearly exceed the harms (or that the harms clearly exceed the benefits in the case of a strong negative recommendation) and that the quality of the supporting evidence is excellent (Grade A or B). In some clearly identified circumstances, strong recommendations may be made based on lesser evidence when high-quality evidence is impossible to obtain and the anticipated benefits strongly outweigh the harms. Grade A evidence: well-designed, randomized controlled trials or diagnostic studies on relevant populations[7]. Grade B evidence: randomized controlled trials or diagnostic studies with minor limitations; overwhelmingly consistent evidence from observational studies[7].

AAFP = American Academy of Family Physicians. BSACI = British Society for Allergy and Clinical Immunology. QoL = quality of life.

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Application of Surgical Robotics in Head and Neck Surgery

Dr Raymond King-yin TSANG

MS, MBChB, FRCSEd, FHKCORL, FHKAM(Otorhinolaryngology)

Clinical Associate Professor,
Department of Surgery
University of Hong Kong

Dr Raymond King-yin TSANG

The surgical robot has been under development for more than a quarter of a century. The first surgical robot was developed in the United States of America (USA) with funding from the National Aeronautical and Space Agency (NASA), Defence Advanced Research Projects Agency (DARPA) of the Department of Defense, and Stanford Research Institute. The vision of the first developers was to develop a remotely controlled master and slave system that allowed complex surgical operations to be performed in the battlefield or space where surgical expertise might not be present. This concept of telesurgery, although achievable with the current technology, is not a routine application of the current generation of surgical robots. Instead, with improved range of motions, dexterity and instrument reach, the current surgical robotics allowed surgeons to perform minimally invasive surgery with better instrument handling and dexterity than current laparoscopic/endoscopic surgical instruments. Since the Food and Drug Administration of USA approved the da Vinci Surgical Robot, the first surgical robot in 2000; the company that produced the first robot, Intuitive Surgical Inc. (Sunnyvale, California, USA) has launched the 4 generations of robots and is ready to launch the 5th generation of robot by early next year. A few other companies have also launched their own design of surgical robot and many more robots will be approved for clinical use by 2020.

The first generation of surgical robots was designed to facilitate laparoscopic surgery and regain the degrees of freedom of instrument movements lost in straight, un-wristed laparoscopic instruments. It was designed to be deployed in a multiple port fashion with each robotic arm inserted to the operating field (the abdominal cavity) from a separate port. Also the instruments were designed to handle intraabdominal tissue and not smaller body parts. In 2002, surgeons from Walter Reed Medical Center in USA employed the da Vinci surgical robot from Intuitive Surgical Inc. to resect a vallecula cyst[1]. This operation was more of a proof of concept, showing that the surgical robot can be readily applicable to the head and neck regions.

It was Weinstein and O' Malley's group from the University of Pennsylvania (UPenn) that started systematically to develop the use of surgical robots for transoral surgery. The group established the feasibility and safety of transoral robotic surgery with a series of experiments from the mannikin to cadaver to canine model and finally phase 1 clinical trials. Clinical studies in 2006 and 2007 showed that the da Vinci Surgical Robot can safely and efficiently resect tumours in the lateral oropharynx, base of tongue and supraglottic larynx[2]. In 2009, the FDA had approved the da Vinci Surgical Robot for transoral resection of T1-2 cancer of the oropharynx and larynx. The UPenn group also coined the term TORS (TransOral Robotic Surgery).

In the similar time frame, surgeons in East Asia, mainly South Korea, had been developing the use of robots to perform neck surgeries from remote incisions. The development was fostered by the cultural stigma on visible neck scars. Prior to robotic neck surgery, endoscopic thyroidectomies had been done for more than a decade but never gained popularity as laparoscopic instruments were much less dexterous in performing fine dissections in the neck. The surgical robot helped the surgeon to regain the lost degrees of freedom of movement and dexterity and made endoscopic neck surgery easier and faster. Starting with robotic thyroidectomy, the robotic neck surgery expanded to submandibulectomies, resection of benign neck masses and even neck dissection. This article will explore the current status of robotic head and neck surgery in 2 major areas, namely transoral robotic surgery as a minimally invasive head and neck surgery and robotic neck surgeries as a remote access surgery for scar transposition.

TRANSORAL ROBOTIC SURGERY

Traditional head and neck cancers usually present in a late stage with large bulky primary and advanced nodal diseases that require major resection, neck dissection and reconstruction. In parallel with the development of TORS, there is an explosive increase in the incidence of a special form of head and neck cancer, the human papilloma virus (HPV) related oropharyngeal cancer which is very different from traditional carcinogen induced cancer. HPV related oropharyngeal cancer tends to present with a small primary and large metastatic neck lymph nodes. Not uncommonly, the cancer presents as metastatic neck lymph nodes of unknown primary. The cancer is very responsive to treatment and the average survival doubles the conventional HPV-negative oropharyngeal cancers. As the primary tumour is usually small and not invading deep structures, it is usually amenable to minimally invasive endoscopic resection. Traditional surgery to the oropharynx frequently requires a large lip split incision with a mandibulotomy to fully expose the tumour. This transgresses a significant amount of normal tissue and would compromise the speech and swallowing functions of the patient. The surgical robot presents as an excellent tool to perform radical resection

of the cancer in this deep area of the mouth. The surgical robot offers the surgeon magnified stereoscopic vision. The small robotic arms have 7 degrees of freedom while not blocking the vision of the surgeon and with range of movements superior to a human hand. Especially in the base of the tongue, tradition endoscopic surgery with laser requires the operative field in the line of sight of the surgeon but the robot with angled telescope and wristed, motorised arms can perform resection of the cancer around the corner. Transoral robotic resection of oropharyngeal cancers, including robotic radical tonsillectomy and robotic base of tongue resection have both been developed as a standardised procedure with low morbidities and high rate of complete resection with negative margins[3]. Fig. 1 and 2 are video captures showing a robotic radical tonsillectomy and a robotic base of tongue resection performed with the da Vinci S surgical robot. With the good prognosis and ability to offer surgical resection with minimal morbidities, a new option of management of HPV-related oropharyngeal cancer has emerged. It is postulated that a complete resection of the primary with a selective neck dissection can reduce the intensity of adjuvant chemoradiation. Over the years, oncologists started to appreciate the long term toxicities of high dose chemoradiation, especially the dreaded complication of late dysphagia and dependency on tube feeding. Clinical trials are now undergoing in US and Europe to compare the complications and oncological efficacy of managing HPV-related oropharyngeal cancer with upfront transoral robotic resection and post-operative reduced dose chemoradiation versus standard dose of radiation[4]. Results of the studies should be ready in the next few years and the management of oropharyngeal cancer may swing from primarily a non-operative approach to transoral robotic surgery.

A small proportion of HPV-related oropharyngeal cancers present as metastatic neck lymph nodes of unknown primary. The primaries can be tiny, a few millimetres in size and cannot even be picked up by modern imaging like MRI and PET scans. Careful examination of the lymphoid tissues of the tonsils and base of tongue under the microscope by a pathologist is required to pick up this cancer. Random biopsies of the tonsil and base of tongue may miss the small cancer hiding in the crypt of the tonsillar tissues. With the surgical robot, all the mucosal lymphoid tissue in the oropharynx, especially the base of tongue lymphoid tissue, can be removed en bloc and submit for pathological examination. A recent meta-analysis has shown that the use of robotic resection of base of tongue tonsillar tissue increased the detection of unknown primary in patients presented with metastatic neck lymph nodes that the cancer cells are p16 positive (a surrogate marker of HPV related oropharyngeal cancer metastasis)[5].

Another important application of TORS is in the management of the hypertrophic tongue base in obstructive sleep apnoea (OSA). As mentioned before, TORS is eminently suitable for resecting lesions in the base of the tongue. Pioneered by the Italian surgeon Claudio Vincini, surgical resection of hypertrophied base of tongue lymphoid tissue had been shown to be effective in the management of OSA in selected patients. Careful selection of appropriate surgical candidates is still necessary to ensure a high success rate[6].

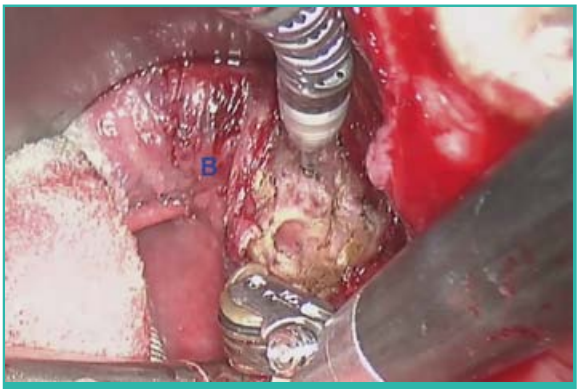

Fig. 1: Robotic right base of tongue resection. B denote the base of tongue.

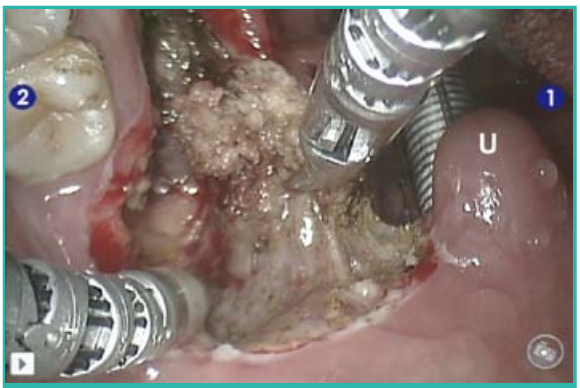

Fig. 2: Robotic left radical tonsillectomy. U denotes the uvula.

ROBOTIC NECK SURGERY

Around year 2000, there was interest in endoscopic thyroidectomies in the Far East. Techniques using ports placed in the axilla and areola with CO_2 insufflation were developed. The technique did not gain wide spread usage partly due to the loss of degrees of freedom with straight, unwristed laparoscopic instruments to perform fine dissection in a limited work space. When the surgical robot was launched, general surgeons and urologists immediately noticed the advantage of improved dexterity in laparoscopic instruments. Soon, the enthusiasm of endoscopic thyroidectomy was rekindled when the operation was performed with the surgical robot. The robot allowed the surgeon to overcome the technical difficulties in tissue manipulation and instrumentation in a confined work space. In South Korea, where there are cultural concerns on visible neck scars and coupled with the government initiative to develop high technology medicine, multiple different approaches for robotic thyroidectomies have been developed. The approaches can be divided into gas insufflation techniques and gasless approaches. The gas insufflation techniques included the bilateral axillary breast approach (BABA), where ports are place in bilateral axillary fold incisions and supra areolar incisions of the breast, with skin flap elevated up to the neck and CO_2 insufflated to create a workspace[7]. The alterative to CO_2 insufflation is to use retractors to suspend the skin and create a workspace for robotic

arms to work. The incision can be pure transaxillary[8] or include a small supra-areolar incision in the ipsilateral breast[9]. Another approach for robotic thyroidectomy is coming from above via a retroauricular incision or modified face-lift incision[10]. Robotic thyroidectomy should not be considered minimally invasive surgery. The main purpose is to translocate the scar to a remote, not easily visible area like the axillar fold or hair line. The area of tissue dissection is actually larger than conventional open thyroidectomy. The procedure has been proven to be safe and oncologically as effective as open thyroidectomies in experienced hands. Recently two meta analyses on robotic thyroidectomy concluded that robotic thyroidectomy is feasible and has comparable complication rates to conventional open thyroidectomy[11,12]. The major advantage is the superior cosmetic results in robotic thyroidectomy. The disadvantages include longer operating time, high pain score in the chest and introduction of new complications like brachial plexus injury.

With the maturation of robotic thyroidectomy techniques, development of robotic neck surgery for resection of other neck masses has progressed. There are now case series on the use of the da Vinci surgical robot for resection of submandibular gland[13], second brachial cleft cyst[14,15], thyroglossal duct cyst[14], neck dissection for thyroid cancer[16], supraomohyoid neck dissection for oral cavity cancer[17,18] and comprehensive neck dissection[19].

In conclusion, use of the da Vinci surgical robot allows resection of lesions in the neck to be approached with a scar located remotely from the neck. However, the primary advantage is better cosmetic outcome and no reduction in surgical invasiveness. It may be up to the patient to decide if the approach is justified against the increased operating time, post-operative pain and most importantly, increased cost.

RECENT DEVELOPMENTS AND FUTURE DIRECTIONS

Intuitive Surgical Inc., the manufacturer of the da Vinci Surgical Robot, had enjoyed more than a decade of monopoly in the field of surgical robots until 2015, when another surgical robot obtained FDA approval. The robot is called the Flex Robot (Medrobotics, USA). This time the robot was primarily designed for transoral use[20]. The robot consists of a motorised flexible endoscope with 2 channels allowing flexible but non-motorised instruments to be mounted adjacent to the endoscope. The surgeon drives the endoscope to visualise the pathology in the oropharynx, larynx or hypopharynx. The surgeon then performed the operation controlling the flexible instruments. This robot is primarily designed for transoral application and has smaller 3mm instruments more suitable for endolaryngeal work.

Multiple companies have been developing surgical robots, which should be ready to be launched by year 2020. Unfortunately, the field of otolaryngology – head and neck surgery is small compared with other specialities; hence most new robots are not designed for a head and neck surgery application. In the meantime, Intuitive Surgical Inc. has not been idling. Instead, they have been developing a surgical robot with a flexible camera and flexible arms all packaged in a single 2.5cm cannula that can be inserted in a single port, ideal for transoral introduction. The robot is called the da Vinci SP, with SP standing for a single port. This system allows a 3D endoscope with 36mm robotic arms to be inserted via the oral cavity to perform operations. The da Vinci SP has gone through the initial clinical trials and should obtain FDA approval for sale by early 2019[21]. The major advantage of the new da Vinci SP robot is that it allows 3 robotic arms to be inserted transorally to perform operations (Fig. 3). Previous generations of the da Vinci robot were not primarily designed for transoral application and could only allow deployment of 2 robotic arms.

This is really an exciting time for minimally invasive surgery in the head and neck field. With the initial success of the TORS by da Vinci robots and increasing application of surgery for oropharyngeal cancer, instrument manufacturers now recognise the importance of the field of robotic head and neck surgery. In the near future, we will be witnessing a blossom of different surgical robots from different companies and further development of robotic head and neck surgery with increased investment into the field by academic medical centres, engineering schools and medical instrument manufacturers.

Fig. 3: Parallel insertion of the robotic arms (grey) and flexible camera (white) of the new da Vinci SP robot in a cadaver model.

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Recent Advances in Otology – Endoscopic Ear Surgery

Dr Amy Sonya CS CHEUNG

MBBS (HK), FRCSEd(ORL), FHKCORL, FHKAM(Otorhinolaryngology)

Specialist in Otorhinolaryngology
Consultant and Chief of Service
Department of Ear, Nose and Throat
Pamela Youde Nethersole Eastern Hospital

Dr Amy Sonya CS CHEUNG

This article has been selected by the Editorial Board of the Hong Kong Medical Diary for participants in the CME programme of the Medical Council of Hong Kong (MCHK) to complete the following self-assessment questions in order to be awarded 1 CME credit under the programme upon returning the completed answer sheet to the Federation Secretariat on or before 31 December 2018.

INTRODUCTION

With the increasing popularity of minimally invasive surgery and the use of endoscopes for sinus surgery, otology is facing a similar paradigm shift leading to a rise in endoscopic ear surgeries (EES). The wide-angle and high-resolution images provided by modern endoscopes and display systems allow improved visualisation compared to the operative microscope. This enables minimally invasive transcanal ear surgery, reducing the need for a postauricular approach and extensive bony dissection.

ADVANTAGES AND DISADVANTAGES OF ENDOSCOPIC EAR SURGERY

The operative microscope, pioneered in the 1950s and 1960s, is essential for otologic surgery as it provides excellent illumination, depth perception, magnification, binocular vision, ability to work with two hands and to capture HD images and videos.[1] However, the microscope is limited when constrained by small surgical corridors, such as the external auditory canal. (Fig. 1 and 2) In that case, additional soft tissue incisions (endaural or postauricular) or bone removal (canalplasty, atticotomy, removal of ossicles, canal up or down mastoidectomy) are sometimes needed to access middle ear diseases. (Fig. 3)

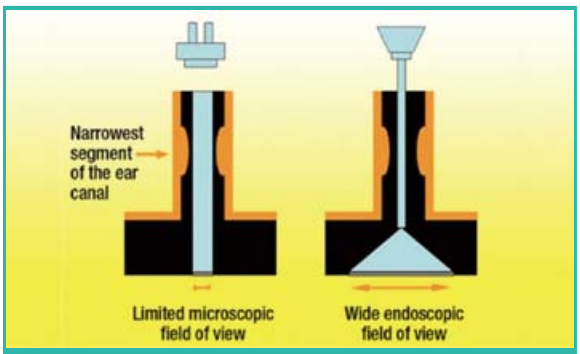

Fig. 1: The view from the microscope is limited by the narrowest segment of the ear canal. While the endoscope can bypass this narrowest segment, it brings the light source close to the operative field, and provides a wide view allowing the surgeon to look around corners.[2]

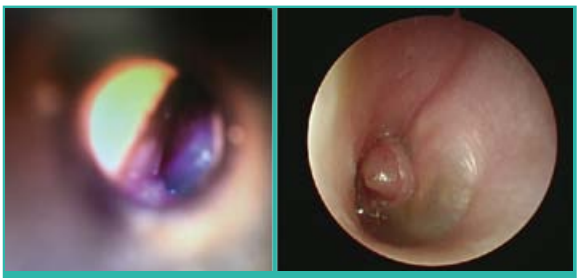

Fig. 2a: Microscopic view of the left tympanic membrane is limited by the narrowest segment of the ear canal, which leads to poor illumination of the target lesion.

Fig. 2b: Endoscopic view of the same ear. The endoscope can bypass the narrowest segment of the ear canal, bringing the light and lens close to the target lesion to provide a better view.

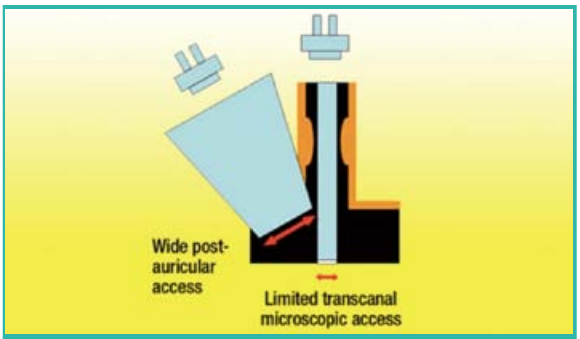

Fig. 3: The limited transcanal view provided by the microscope has forced surgeons to perform postauricular mastoidectomy, removing a considerable amount of healthy bone, to enable keyhole access to the attic.[2]
The modern endoscope enables excellent visualisation of the tympanic membrane and middle ear because it is fitted with a wide-angle lens with illumination emerging from the distal tip. Bypassing the narrow segment of the external ear canal, the endoscope allows a close-up detailed yet wide-angle view of the entire middle ear cavity. It gives excellent views of all corners, the attic, retrotympanum, protympanum, and hypotympanum.

Endoscopic ear surgery (EES) has its limitations. It is an one-handed operation. It is especially difficult when there is haemorrhage, having to switch instruments between suction and dissection and also wiping the endoscope. The small external ear canal limits the size of instruments that can be fitted in. (Fig. 4a and 4b)

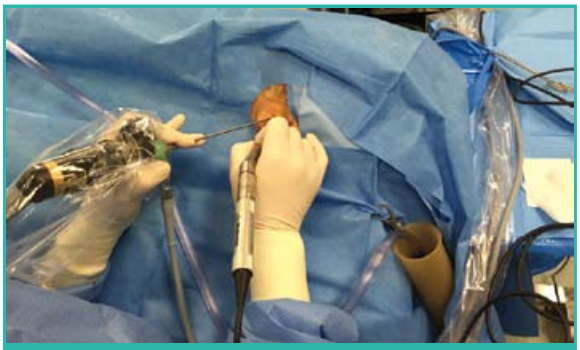

Fig. 4a: One hand holding the endoscope and the other hand holding an otologic drill.

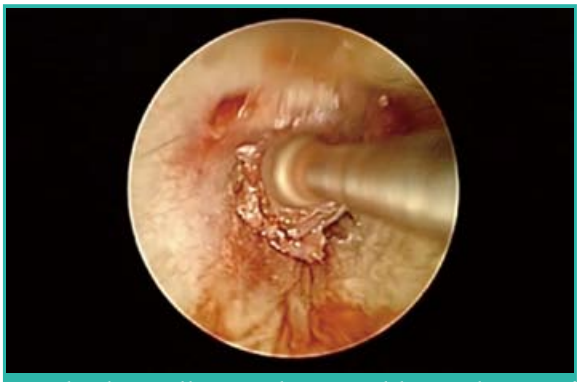

Fig. 4b: The small external ear canal limits the size of instruments that can be fitted in. The tip of the endoscope can be at risk of being damaged by the rotating drill.

Complications specific to the use of endoscopes in the ear include direct trauma to delicate middle ear structures by the tip of the endoscope, excessive heat dissipation injuring nerves and the inner ear, and ototoxicity related to excessive use of anti-fog solution.

ENDOSCOPIC TYMPANOPLASTY

The modern endoscope allows improved views and reconstruction of tympanic membrane perforations. In microscopic surgery, to have proper exposure, endaural incisions or postauricular incisions are used for anterior and subtotal perforations. With the endoscope, tympanoplasty can be performed through a transcanal approach, regardless of the ear canal anatomy.[3] Transcanal approach reduces postoperative pain, avoids a numb or protruded pinna, or postauricular scar or depression.

Several studies have directly compared anatomic and functional successes in tympanoplasty by an endoscopic approach (EA) or microscopic approach (MA). Very similar graft survival (EA 83.3%-90% vs MA 83%-86%) and functional success rates (EA90% vs MA85%-90%) have been reported in adults.[3-6]

ENDOSCOPIC EAR SURGERY FOR CHOLESTEATOMA

Problems of residual and recurrent cholesteatoma following traditional microscopic surgical mastoidectomy remains a challenge.[7] The rate of residual cholesteatoma reaches 7% (2-21%) for canal wall down (CWD) mastoidectomy and 22% (15-27%) for canal wall up (CWU) mastoidectomy. Recurrence rate reaches 5% (0-10%) for CWD and 25% (9-70%) for CWU mastoidectomy.[8] Full exposure and visualisation of the entire middle ear spaces involved by cholesteatoma are sometimes limited when using the microscope.

Endoscopic ear surgery has significantly changed surgical, anatomic and physiologic concepts.[8] Rediscovering the ear canal as the access port for cholesteatoma surgery is the main advantage of endoscopic ear surgery.[2] It allows better access to the tympanic cavity, which is the birthplace of cholesteatoma, and allows the surgeon to identify and address the cause for any selective atelectasis or poor ventilation.

With respect to cholesteatoma control, Presutti and colleagues[9] performed a systematic review of 7 studies to compare residual and recurrent disease following EES relative to open techniques. In a cumulative analysis of 515 patients (517 surgeries), of which 57% were transcanal endoscopic ear surgery (TEES), and 43% were combined technique including mastoidectomy, 6.2% with residual and 3.1% with recurrent cholesteatoma, with a mean follow-up of 23.4 months. The overall results of TEES in conjunction with selected EES/microscopic approaches compare favourably with established results for open canal wall down techniques. Although a longer duration of follow-up is needed, the endoscopic technique appears to be associated with superior control of cholesteatoma and reduction in the number of mastoidectomies.[7]

With respect to hearing outcomes following cholesteatoma removal, Marchioni and colleagues[10] compared 31 TEES procedures with 28 microscopic CWU controls, and noted similar pure tone average outcomes following both TEES and microscopic placement of partial and total ossicular replacement prostheses (PORPs and TORPs). In addition, they found that ossicular chain preservation was statistically more likely in TEES (42%) than in microscopic CWU surgery (10%). [7]

ENDOSCOPIC STAPES SURGERY

Since the advent of endoscopic ear surgery, there have been several reports describing the role of endoscopes in stapes procedures. Hunter and Rivas summarised that several issues have been identified.[11] It was noted that the endoscopes improved visualisation and reduced the need for curetting the medial bony canal in order to provide exposure to the oval window niche. It also allowed decreased chorda tympani nerve handling.[12] Because it required less dissection and manipulation, it reduced the need for turning the patient's head in difficult situations, e.g. those with obese short necks or cervical osteoarthritis.[13] However, there was significant difficulty in manipulating the drill and endoscope within the ear canal, and thus bone removal was done with a curette.[14] It was also noted that although endoscopes provided improved visualisation, commonly used instruments may not be able to access every location visualised.[12]

In terms of audiologic outcomes, Hunter and Rivas showed that a range of 56% to 86.7% of patients had closure of their air-bone gaps under 10dB HL, and at least 90% had postoperative air-bone gaps under 20dB HL.[11] Sensorineural hearing loss occurred in 1.2% of all reported endoscopic stapes procedures. In terms of complications, no permanent facial nerve injuries have occurred. The incidence of postoperative dizziness is comparable to microscopic procedures. Postoperative dysgeusia and pain scores appear to be improved in endoscopic stapes surgery compared with microscopic approaches. Nonetheless, the authors concluded that with only 161 reported endoscopic stapes cases to date, further prospective studies with larger patient populations are warranted.[11]

APPLICATION OF ENDOSCOPIC EAR SURGERY FOR TEMPORAL BONE LESIONS

Management of temporal bone lesions are challenging because of the adjacent critical structures that are located within the skull base. Fortunately, most of these lesions are benign and do not require wide tissue margins. The microscopic transcanal or postauricular approaches are the traditional method for excision. Recently, transcanal endoscopic ear surgery (TEES) has become a relatively new option.[15]

Marchioni (2013) and colleagues[16] reported using the TEES approach to completely excise glomus tympanicum that is confined within the middle ear cavity. They have removed 13 such tumours, 10 of which were removed exclusively using the endoscope, 3 were removed in combination with the microscope.[15] No complications were noted in this series. No recurrence was observed, though the follow-up duration was less than 1 year for most patients.[15]

Marchioni and colleagues[16] also reported using TEES to remove 2 middle ear adenomas with preservation of the ossicular chain in one of the cases. The duration of follow-up in this series was less than a year and no specific comment was made on recurrence. Other temporal bone pathologies managed with a combined microscope open endoscopic approach or an exclusively endoscopic approach have been reported, including removal of intracochlear and intracanalicular schwannomas, facial nerve haemangioma, cholesteatoma, chondroma and geniculate facial haemangioma.[16,17]

CONCLUSION

The spectrum of endoscopic ear surgery is growing in scope and frequency of use given its being increasingly applied to a broad range of middle ear and skull base pathologies.[7] Current data suggest that EES provides equivalent short-term and long-term control of chronic middle ear disease compared to microscopic approaches, while offering the potentially decreased morbidity of a minimally invasive approach. Despite a rapidly growing collection of retrospective analyses and case series, there remains a distinct lack of large prospective studies to better evaluate the outcomes of EES in relation to the gold standard of microscopic surgery. Additional studies are needed to further classify the efficacy and presumed reduced morbidity of EES.[7]

Beyond tympanoplasty and mastoidectomy surgery, the role of the endoscope is still evolving. Small studies suggest that the endoscope can be a valuable adjunct during approaches to the lateral skull base. Additional studies and refinement of operative techniques will be critical to these applications of EES in the future.[7]

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MCHK CME Programme Self-assessment Questions

Please read the article entitled "Recent Advances in Otology – Endoscopic Ear Surgery" by Dr Amy Sonya CS CHEUNG and complete the following self-assessment questions. Participants in the MCHK CME Programme will be awarded CME credit under the Programme for returning completed answer sheets via fax (2865 0345) or by mail to the Federation Secretariat on or before 31 December 2018 Answers to questions will be provided in the next issue of The Hong Kong Medical Diary.

Questions 1-10: Please answer T (true) or F (false)

1. The view of the microscope in ear surgery is not limited by the narrowest part of the external ear canal.
2. The modern endoscope allows excellent visualisation of the tympanic membrane and middle ear because it is fitted with a wide-angle lens with illumination emerging from the distal tip. It can bypass the narrowest segment of the external ear canal.
3. The modern endoscope in endoscopic ear surgery has no limitations.
4. Heat dissipated at the tip of the endoscope is limited and will not damage the middle ear or inner ear structures.
5. Endoscopic tympanoplasty can reduce the need for endaural or postauricular incisions.
6. Transcanal approaches to ear surgery increase postoperative pain.
7. Endoscopic ear surgery has not changed surgical, anatomic and physiologic concepts.
8. Rediscovering the ear canal as the access port for cholesteatoma surgery is the main advantage of endoscopic ear surgery.
9. Endoscopic stapes surgery may reduce the need to manipulate the chorda tympani nerve.
10. The role of endoscopes in lateral skull base surgery is still evolving.

ANSWER SHEET FOR DECEMBER 2018

Please return the completed answer sheet to the Federation Secretariat on or before 31 December 2018 for documentation. 1 CME point will be awarded for answering the MCHK CME programme (for non-specialists) self-assessment questions.

Recent Advances in Otology – Endoscopic Ear Surgery

Dr Amy Sonya CS CHEUNG

MBBS (HK), FRCSEd(ORL), FHKCORL, FHKAM(Otorhinolaryngology)

Specialist in Otorhinolaryngology
Consultant and Chief of Service
Department of Ear, Nose and Throat
Pamela Youde Nethersole Eastern Hospital

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Answers to November 2018 Issue

Update on the Management of Eczema

1. F 2. F 3. F 4. F 5. T 6. F 7. T 8. T 9. T 10. F

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Cleared for Take Off…

Dr HS CHAN

MBChB(CUHK), MRCSEd, FRCSEd(ORL), FHKCORL, FHKAM

Specialist in Otorhinolaryngology

Dr HS CHAN

This message from the Air Traffic Controller (ATC) is still on my mind and it will remain so for the rest of my life. Fond memories of my first solo flight in Melbourne, Australia in 2003 surge every time, with "cleared for take off ". 2003 was the year which celebrated the 100th anniversary of powered flying. In 1903, the Wright brothers made every man's dream come true. Flying became a reality.

There is no doubt that being a pilot, sitting in a sophisticated cockpit, controlling the complicated dashboard and commanding the cabin have always been every big boy's dream. For most of us, however, this dream seems rather remote and impossible, especially in a city called Hong Kong. However, getting a Private Pilot Licence (PPL) is not as difficult, as expensive and as unsafe as one would imagine.

I obtained my fixed-wing PPL in 2004 in Hong Kong though most of my intensive flight training took place in Melbourne. The Aviation Club in Hong Kong provides a very high standard ICAO (International Civil Aviation Organization) equivalent training and examination. To be a Hong Kong Aviation Club member is actually quite easy and the joining/subscription fee will not be more expensive than your golf/cricket/yacht /Jockey clubs.

All the fixed-wing flying activities in Hong Kong are now undertaken in the Shek Kong PLA (People's Liberation Army) airfield and have been limited to such operations on Saturdays and Sundays. To overcome the limit of runway availability, the club introduced helicopter flying a few years ago and I am lucky enough to be among the first few batches of graduates in helicopter flying training. I am currently a R22 and R44 type certified helicopter pilot.

The syllabus for PPL (both fixed-wing and helicopter) requires you to pass 7 written papers covering aviation law, meteorology, general aircraft technical, type aircraft technical, radiotelephony and human performance. The syllabus sounds quite overwhelming but it is really nothing when compared with your MB examination and I can guarantee a hundred fold more of fun. You also need to take practical lessons in the cockpit for no less than 40 hours, which must include 10 hours of solo flights.

After all the hard work and investment, you will get what you have paid for. Now the sky belongs to you and your beloved. The moment your aircraft lifts off from the runway, it will be the moment when all basic physical laws of the universe are in action, to serve you and to be commanded by you. You can cruise in the blue sky, watching the hustle and bustle of the streets below with the sky-scrapers passing by. At the same time, you are watched from below by the interested, probably envious. It is fast and convenient and would only take a few minutes to finish orbiting the Hong Kong Island, which includes the 2-minute flight along the scenic Victoria Harbour. You set your course back, passing Sai Kung, Tolo Harbour and through the Kaddorie gap back to the Shek Kong airfield. With all the procedures and communications done properly, you fit into the right circuit pattern and the beautiful flying machine touches down in style.

If you are flying a helicopter, there are additional funs of enjoying island hopping in Sai Kung, flying low level from one beautiful beach to another. Of course, you should always respect other holiday makers on the beach by strictly adhering to noise abatement procedures and should not disturb anyone in the vicinity of the helicopter. If you wish to land your helicopter for a photo or scenic walk, you can do so by carefully doing an aerial inspection and an engine power check before landing your helicopter on the site you prefer. The freedom of helicopter flying does come with a price. Unlike fixedwing aircraft, which can fly by itself even if you leave your hand off the control, a helicopter is inherently unstable. You need to constantly adjust input to keep it in equilibrium. Therefore, flying a helicopter is far more demanding than flying a fixedwing aircraft in this aspect.

Flying can be risky, just like performing surgical operations, especially if you are not properly trained to deal with some unexpected situations (e.g. engine failure, fire, stall and spin). A good pilot is a pilot who constantly prepares for emergency and can react to it correctly in a split second, almost like a reflex. This is the reason why we spend a lot of time in memorising emergency procedures and simulating emergency conditions in case things go wrong. Fortunately, our clever engineers have designed the aircraft to glide (in fixed wings) and to auto-rotate (in helicopters) in case there is engine failure. Therefore, pilots can still safely bring their aircraft safely to the ground in one piece should the engine quit.

In my past 15 years of flying, I have made lots of friends, here in HK and overseas, inside the aviation field or elsewhere. I have also learned to appreciate things with a different perspective. I have with me lots of exciting stories to tell. You don't, however, have to listen to mine. Just pick up the key, jump inside the cockpit,

fasten your seatbelt, crank your engine and your own story will be just as exciting as mine, once you are told "You are cleared for take off!"

Fig. 1: Cross country flight in Cessna 172


Fig. 2: Shek Kong airfield


Fig. 3: Flying over Victoria Harbour


Fig. 4: Taking my daughter to the sky


Fig. 5: Flying over Sai Kung in Helicopter


Fig. 6: Beach landing

FMSHK Annual Scientific Meeting 2018

On 7 Oct 2018, the Federation of Medical Societies of Hong Kong successfully held the Annual Scientific Meeting 2018 at the Sheraton Hotel and Towers, with the theme of "Medical Advances in Community Health".

A total of 15 medical talks were delivered by a panel of distinguished speakers. They shared with us the latest knowledge and developments for Community Health, Hepatology, Cardiology, Brain Health, Mental Health, Oncology, Respiratory Health, Metabolic Disease, Dermatology, Allergy, Infection and Urology.

FMSHK was much privileged to have the Officiating Guest, Prof the Hon Sophia CHAN Siu-chee, JP, Secretary for Food & Health Bureau, 宋瑋副部長, Representative of the Liaison Officer of the Central People's Government in Hong Kong SAR, 顧向應教授, Representative of the Chinese Medical Association, Dr. Constance CHAN Hon-yee, Director of Health, Prof. Hon Joseph LEE Kok-long, Legislative Council Member, Dr. Hon Pierre CHAN, Legislative Council Member – Medical, Dr LAU Chor-chiu, Vice President of the Hong Kong Academy of Medicine and Dr the Hon Che-hung LEONG GBM, GBS, OBE, JP, to officiate the opening ceremony.

Professor CHAN and the Honourable Guests showed us the 9 different symbols representing different aspects of medical advancement, namely, Technology and Innovation, Mental Health, Exercise, Medicine, Scientific Research, Quit Smoking and Alcohol, Genetic, Healthy Eating and Health Professional.

We would like to take this opportunity to express our sincere gratitude to our Officiating Guest, Honourable Guests, Co-chairmen, Chairpersons and Speakers for their contributions that made the event a great success. Our gratitude also extends to various sponsors for their generous support. We look forward to seeing you in our Annual Scientific Meeting in 2019!

Opening Ceremony

Sessions

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Ban on E-cigarettes Press Conference on 27 September 2018

To protect the health of our community, especially the health of the younger generations in Hong Kong, the Federation of Medical Societies of Hong Kong (FMSHK), the Hong Kong Medical Association (HKMA), the Hong Kong Dental Association (HKDA), and the Hong Kong Council on Smoking and Health (COSH) came together on 27 September 2018 to strongly urge the Government to issue a total ban of electronic cigarettes and other new tobacco products, as well as to draw up a timeline for a total ban of conventional cigarette smoking.

Fig 1. From left, Dr Jane CHAN, Dr Ludwig TSOI, Dr LIU Wai-ming (HKDA), Dr David LAM (HKMA), Prof LAM Tai-hing (HKU), Ms Yolanda NG (COSH) and Dr Daniel HO (COSH). Dr Raymond LO and Dr Alson CHAN also spoke on behalf of the Federation.

A Proposal in Response to the Policy Address Consultation

With the aims to improve "Care for the Elderly" and "Care for Advanced Diseases" in Hong Kong, the Federation sent a proposal to the Policy Innovation and Co-ordination Office on 31 Aug 2018 in response to the Policy Address Consultation. Ten recommendations were made to the Government on matters of care for advanced diseases and towards end of life.

1. It is highly recommended that government should formulate a central policy with strategic directions for better preparation with enhancement of care for the aged and for the dying, to face the increasing prevalence and demand from advanced diseases in an ageing society. Elderly Care Policy and End of Life Care Policy are warranted.
2. Care in the community for elderly and those with advanced diseases need to be developed. Home health care outreach support is inadequate for those living at own homes. Day Care and Residential Care Home services are insufficient with variable quality. Community hospice and palliative facilities are insufficient. There is no provision of hospitals for older people.
3. Elderly-friendly accommodation/retirement/settlement villages should be developed, to promote ageing in place of choice at community. Smart City concept needs to be implemented for elderly and those with disability. City and town planning and procedures should be in concordance.
4. Public-private-partnership should be more actively supported by government. Initiatives should be offered to private sector to share the medical and social care of our older population, especially those with advanced and palliative conditions.
5. There should be more co-ordination of the NGOs in working towards the elderly and people with advanced diseases, to minimise duplication and inefficient use of resources.
6. Provision and extension of current rehabilitation facilities in community to cover not just mentally handicapped, but wide range of disabilities including stroke, Parkinson's, degenerative musculoskeletal conditions etc. Government should facilitate and support collaborative initiatives for development of centre sites and services.
7. Outreach support should be strengthened to enable dying at a place of choice. Barriers to dying at home should be minimised.
8. More education and empowerment for elderly and people with advanced diseases. Advance Directive should be legalised.
9. Elderly Care Vouchers should be stepped up and reinforced. Palliative Care Vouchers should be introduced. Both should be made available for services in Hong Kong and in Bay Area.
10. Health insurances schemes from both government and industry to cover more elderly conditions and encourage public to plan for their future health care expenditure needs.

The Care for Advanced Diseases Consortium has met and prioritised on several recommendations to be followed up by various working groups. Our members and readers are invited to participate in this exercise and provide their valuable suggestions, whereby we can gather up concerted efforts to improve the care and wellbeing of our ageing population with advanced diseases.

Advisers and Members of Consortium

	Title in Consortium	Name	Title	Organization
1	Advisor	Dr. LEONG Che-hung	Chairman	Committee on Elder Academy Development Foundation
2	Advisor	Prof. Alfred CHAN, Cheung-ming	Chairperson	Equal Opportunity Commission
3	Advisor	Dr. Mario CHAK, Wai-Kwong	President	The Federation of Medical Societies of Hong Kong
4	Convener	Dr. Raymond LO, See-kit	Immediate Past President	The Federation of Medical Societies of Hong Kong
5	Hon. Secretary	Prof. Bernard CHEUNG, Man-yung	Hon. Secretary	The Federation of Medical Societies of Hong Kong
6	Member	Dr. LAM Ching-choi	Chairman	Elderly Commission
7	Member	Mr. CHUA Hoi-wai	Chief Executive	The Hong Kong Council of Social Service
8	Member	Dr. HO Chung-ping	President	Hong Kong Medical Association
9	Member	Dr. YUEN Kwok-keung	Chairman	Hong Kong Society of Palliative Medicine
10	Member	Dr. Theresa LAI, Tze-kwan	Chairperson	Hong Kong Palliative Nursing Association
11	Member	Dr. TSE Chun-yan	Honorary Advisor	Hong Kong Society of Palliative Medicine
12	Member	Mr. Raymond WONG, Siu-keung	Chairman	Society for the Promotion of Hospice Care
13	Member	Dr. Rico LIU	EXCO member	The Hong Kong Anti-Cancer Society
14	Member	Mr. YUEN Siu-lam	Chairman	Hong Kong Alliance of Patients Organizations
15	Member	Prof. Cecilia CHAN, Lai-wan	Professor	The University of Hong Kong
16	Member	Dr. YUNG Cho-yiu	Co-op member	The Hong Kong Geriatrics Society
17	Member	Dr. Edward M.F. LEUNG	President	Hong Kong Association of Gerontology
18	Member	Ms. Ellen KU, Wai-yin	President	College of Nursing, Hong Kong
19	Member	Mr. Samuel CHAN, Yan-chi	Chairperson	Hong Kong Occupational Therapy Association

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
						★Seminar on Treating Obesity – A Multidisciplinary Perspective: 1) Medical Treatment for Obesity 2) Surgical Treatment for Obesity 3) Physiotherapy in Obesity Management 4) Nutritional Management for Obesity **1**
2	**3**	★HKMA Kowloon West Community Network - Overview of Common Menstrual Disorders and The Benefits and Risks of Hormonal Treatment as an Effective Treatment Option ★HKMA Yau Tsim Mong Community Network - Nutritional Therapy in Dementia ★HKMA-HKS&H CME Programme 2018 -2019 ★FMSHK Officers' Meeting ★HKMA Council Meeting **4**	★HKMA Central, Western & Southern Community Network - Physiotherapy for Common Orthopaedic Conditions **5**	★HKMA Hong Kong East Community Network - Updated Evidence on Lifestyle and Nutritional Intervention for Type 2 Diabetes ★HKMA Kowloon East Community Network - Asthma Management: What Are The New Criterion Physicians Should Evaluate? ★HKMA New Territories West Community Network - Updates on Advanced LDL-Lowering Treatment ★FMSHK Certificate Course in Ophthalmology **6**	★FMSHK Certificate Course on Difficult Communications in Healthcare 2018 **7**	★Refresher Course for Health Care Providers 2018/2019 - Sports Medicine **8**
★HKMA Annual Ball 2018 **9**	**10**	★HKMA Kowloon West Community Network - Stroke Prevention in Elderly Population with Atrial Fibrillation **11**	★The Hong Kong Neurosurgical Society Monthly Academic Meeting –A Review on Intracranial Dural Arteriovenous Fistula - Pathophysiology and Treatment **12**	★HKMA Kowloon East Community Network - The COPD Patient Journey, What More Can Be Done? ★HKMA New Territories West Community Network - Antimicrobial Stewardship Programs (ASP) in Primary Care ★FMSHK Certificate Course in Ophthalmology **13**	★FMSHK Certificate Course on Difficult Communications in Healthcare 2018 **14**	**15**
★Managing Allergy, from Gut to Skin 從腸胃到皮膚，中西醫論過敏 **16**	**17**	**18**	★HKMA Central, Western & Southern Community Network – Antimicrobial Stewardship Programs (ASP) in Primary Care **19**	★HKMA Hong Kong East Community Network & Hong Kong Red Cross Blood Transfusion Service - Management of Patients with Iron Deficiency Anaemia ★FMSHK Certificate Course in Ophthalmology ★FMSHK Executive Committee Meeting **20**	★FMSHK Certificate Course on Difficult Communications in Healthcare 2018 **21**	**22**
23	**24**					
30	**31**	**25**	**26**	**27**	**28**	**29**

Date / Time	Function	Enquiry / Remarks
1 SAT 12:30 PM	**Seminar on Treating Obesity – A Multidisciplinary Perspective: 1) Medical Treatment for Obesity 2) Surgical Treatment for Obesity 3) Physiotherapy in Obesity Management 4) Nutritional Management for Obesity** Organiser: Hong Kong Medical Association; Kowloon Hospital Alumni Society; Speaker: Dr. Michele YUEN, Dr. Daniel TONG, Ms. Jocelyn CHAN, Ms. Karin TSE; Venue: Conference Room 1&2, 2/F, Main Building, Kowloon Hospital, 147A Argyle Street, Kowloon	Ms. Philippa LO Tel: 9667 5600 2 CME Point
4 TUE 1:00 PM	**HKMA Kowloon West Community Network - Overview of Common Menstrual Disorders and The Benefits and Risks of Hormonal Treatment as an Effective Treatment Option** Organiser: HKMA Kowloon West Community Network; Chairman: Dr. CHAN Siu Man, Bernard; Speaker: Dr TAM Wing Kei; Venue: Fulum Palace, Shop C, G/F, 85 Broadway Street, Mei Foo Sun Chuen	Ms. Antonia LEE Tel: 2527 8285 1 CME Point
1:00 PM	**HKMA Yau Tsim Mong Community Network - Nutritional Therapy in Dementia** Organiser: HKMA Yau Tsim Mong Community Network; Chairman: Dr. HO Fung; Speaker: Dr. CHAN Chun Chung, Ray; Venue: Crystal Ballroom, 2/F, The Cityview Hong Kong, 23 Waterloo Road, Kowloon	Ms. Candice TONG Tel: 2527 8285 1 CME Point
1:00 PM	**HKMA-HKS&H CME Programme 2018 -2019** Organiser: Hong Kong Medical Association & Hong Kong Sanatorium & Hospital; Speaker: Dr. NG Ping Wing; Venue: HKMA Central Premises, Dr. Li Shu Pui Professional Education Centre, 2/F, Chinese Club Building, 21-22 Connaught Road Central, HK	HKMA CME Dept. Tel: 2527 8285 1 CME Point
8:00 PM	**FMSHK Officers' Meeting** Organiser: The Federation of Medical Societies of Hong Kong; Venue: Gallop, 2/F, Hong Kong Jockey Club Club House, Shan Kwong Road, Happy Valley, Hong Kong	Ms. Nancy CHAN Tel: 2527 8898
9:00 PM	**HKMA Council Meeting** Organiser: The Hong Kong Medical Association; Chairman: Dr. HO Chung Ping, MH, JP; Venue: HKMA Wanchai Premises, 5/F, Duke of Windsor Social Service Building, 15 Hennessy Road, HK	Ms. Christine WONG Tel: 2527 8285
5 WED 1:00 PM	**HKMA Central, Western & Southern Community Network - Physiotherapy for Common Orthopaedic Conditions** Organiser: HKMA Central, Western & Southern Community Network; Chairman: Dr. POON Man Kay; Speaker: Dr. Francis.K.H. WONG; Venue: HKMA Central Premises, Dr. Li Shu Pui Professional Education Centre, 2/F, Chinese Club Building, 21-22 Connaught Road Central, HK	Ms. Antonia LEE Tel: 2527 8285 1 CME Point
6 THU 1:00 PM	**HKMA Hong Kong East Community Network - Updated Evidence on Lifestyle and Nutritional Intervention for Type 2 Diabetes** Organiser: HKMA Hong Kong East Community Network; Chairman: Dr. AU Chi Lap, Simon; Speaker: Dr. YUEN Mae Ann, Michele; Venue: HKMA Wanchai Premises, 5/F, Duke of Windsor Social Service Building, 15 Hennessy Road, HK	Ms. Candice TONG Tel: 2527 8285 1 CME Point
1:00 PM	**HKMA Kowloon East Community Network - Asthma Management: What Are The New Criterion Physicians Should Evaluate?** Organiser: HKMA-Kowloon East Community Network; Chairman: Dr. AU Ka Kui, Gary; Speaker: Dr. Samuel LEE; Venue: Lei Garden Restaurant, Shop no. L5-8, apm, Kwun Tong, No. 418 Kwun Tong Road, Kwun Tong, Kowloon	Ms. Antonia LEE Tel: 2527 8285 1 CME Point
1:00 PM	**HKMA New Territories West Community Network - Updates on Advanced LDL-Lowering Treatment** Organiser: HKMA New Territories West Community Network; Chairman: Dr. LEE Shin Cheung; Speaker: Dr. CHEUNG Ling Ling; Venue: Pak Loh Chiu Chow Restaurant, Shop A316, 3/F, Yoho Mall II, Yuen Long	Ms. Antonia LEE Tel: 2527 8285 1 CME Point
7:00PM	**FMSHK Certificate Course in Ophthalmology** Organiser: The Federation of Medical Societies of Hong Kong; Venue: Lecture Hall, 4/F, Duke of Windsor Social Service Building, 15 Hennessy Road, Wan Chai, Hong Kong	The Secretariat of FMSHK Tel: 2527 8898 Fax: 2865 0345
7 FRI 7:00PM	**FMSHK Certificate Course on Difficult Communications in Healthcare 2018** Organiser: The Federation of Medical Societies of Hong Kong; Venue: Lecture Hall, 4/F, Duke of Windsor Social Service Building, 15 Hennessy Road, Wan Chai, Hong Kong	The Secretariat of FMSHK Tel: 2527 8898 Fax: 2865 0345
8 SAT 2:15 PM	**Refresher Course for Health Care Providers 2018/2019 - Sports Medicine** Organiser: Hong Kong Medical Association; HK College of Family Physicians; HA-Our Lady of Maryknoll Hospital; Speaker: Dr. Sum Kin LEUNG; Venue: Atrium Function Rooms, Lobby Floor, Hong Kong Gold Coast Hotel, 1 Castle Peak Road, Gold Coast, Hong Kong	Ms. Clara Tsang Tel: 2354 2440 2 CME Point
9 SUN 7:30 PM	**HKMA Annual Ball 2018** Organiser: The Hong Kong Medical Association; Chairman: Dr. CHAN Nim Tak, Douglas, Dr. CHAN Yee Shing, Alvin, Dr. CHAN Hau Ngai, Kingsley, Dr. PONG Chiu Fai, Jeffrey, Dr. YEUNG Hip Wo, Victor; Venue: Regal Ballroom, Regal Hong Kong Hotel, 88 Yee Wo Street, Causeway Bay, Hong Kong	Ms. Sandy WONG Tel: 2527 8285
11 TUE 1:00 PM	**HKMA Kowloon West Community Network - Stroke Prevention in Elderly Population with Atrial Fibrillation** Organiser: HKMA Kowloon West Community Network; Chairman: Dr. LAM Ngam, Raymond; Speaker: Dr. YIP Wai Kwok Gabriel; Venue: Fulum Palace, Shop C, G/F, 85 Broadway Street, Mei Foo Sun Chuen	Ms. Antonia LEE Tel: 2527 8285 1 CME Point
12 WED 7:30 PM	**The Hong Kong Neurosurgical Society Monthly Academic Meeting –A Review on Intracranial Dural Arteriovenous Fistula - Pathophysiology and Treatment** Organizer : Hong Kong Neurosurgical Society; Speaker(s): Dr ZHUANG Tin Fong; Chairman : Prof. George WONG; Venue : Seminar Room, G/F, Block A, Queen Elizabeth Hospital	1.5 points College of Surgeons of Hong Kong Dr. WONG Sui To Tel: 2595 6456 Fax. No.: 2965 4061
13 THU 1:00 PM	**HKMA Kowloon East Community Network - The COPD Patient Journey, What More Can Be Done?** Organiser: HKMA-Kowloon East Community Network; Chairman: Dr. SHIU Ka Lok, Ivan; Speaker: Dr. WONG King Ying; Venue: V Cuisine, 6/F., Holiday Inn Express Hong Kong Kowloon East, 3 Tong Tak Street, Tseung Kwan O	Ms. Antonia LEE Tel: 2527 8285 1 CME Point

Date / Time	Function	Enquiry / Remarks
13 THU 1:00 PM	**HKMA New Territories West Community Network - Antimicrobial Stewardship Programs (ASP) in Primary Care** Organiser: HKMA New Territories West Community Network; Chairman: Dr. CHEUNG Kwok Wai, Alvin; Speaker: Dr. Leo LUI; Venue: Atrium Function Rooms, Lobby Floor, Hong Kong Gold Coast Hotel, 1 Castle Peak Road, Gold Coast, Hong Kong	Ms. Antonia LEE Tel: 2527 8285 1 CME Point
7:00PM	**FMSHK Certificate Course in Ophthalmology** Organiser: The Federation of Medical Societies of Hong Kong; Venue: Lecture Hall, 4/F, Duke of Windsor Social Service Building, 15 Hennessy Road, Wan Chai, Hong Kong	The Secretariat of FMSHK Tel: 2527 8898 Fax: 2865 0345
14 FRI 7:00PM	**FMSHK Certificate Course on Difficult Communications in Healthcare 2018** Organiser: The Federation of Medical Societies of Hong Kong; Venue: Lecture Hall, 4/F, Duke of Windsor Social Service Building, 15 Hennessy Road, Wan Chai, Hong Kong	The Secretariat of FMSHK Tel: 2527 8898 Fax: 2865 0345
16 SUN 2:00PM	**Managing Allergy, from Gut to Skin 從腸胃到皮膚， 中西醫論過敏** Organiser: Association for Integrative Aesthetic Medicine, Hong Kong.; Chairman: Dr LEE Jin; Speaker: Loo King Fan, Yu Chau Leung, Chan Chun Yin, Lin Zhi Xiu; Venue: LT5, Yasumoto International Academic Park,CUHK	Queenie Tel: 3575 8600
19 WED 1:00 PM	**HKMA Central, Western & Southern Community Network – Antimicrobial Stewardship Programs (ASP) in Primary Care** Organiser: HKMA Central, Western & Southern Community Network; Chairman: Dr. TSANG Chun Au; Speaker: Dr. Leo LUI; Venue: HKMA Central Premises, Dr. Li Shu Pui Professional Education Centre, 2/F, Chinese Club Building, 21-22 Connaught Road Central, HK	Ms. Antonia LEE Tel: 2527 8285 1 CME Point
20 THU 1:00 PM	**HKMA Hong Kong East Community Network & Hong Kong Red Cross Blood Transfusion Service - Management of Patients with Iron Deficiency Anaemia** Organiser: HKMA Hong Kong East Community Network & Hong Kong Red Cross Blood Transfusion Service; Chairman: Dr. YIP Yuk Pang, Kenneth; Speaker: Dr. LAU Ching Wa; Venue: HKMA Wanchai Premises, 5/F, Duke of Windsor Social Service Building, 15 Hennessy Road, HK	Ms. Candice TONG Tel: 2527 8285 1 CME Point
7:00PM	**FMSHK Certificate Course in Ophthalmology** Organiser: The Federation of Medical Societies of Hong Kong; Venue: Lecture Hall, 4/F, Duke of Windsor Social Service Building, 15 Hennessy Road, Wan Chai, Hong Kong	The Secretariat of FMSHK Tel: 2527 8898 Fax: 2865 0345
8:00PM	**FMSHK Executive Committee Meeting** Organiser: The Federation of Medical Societies of Hong Kong; Venue: Council Chamber, 4/F, Duke of Windor Social Service Building, 15 Hennessy Road, Wanchai, Hong Kong	Ms. Nancy CHAN Tel: 2527 8898
21 FRI 7:00PM	**FMSHK Certificate Course on Difficult Communications in Healthcare 2018** Organiser: The Federation of Medical Societies of Hong Kong; Venue: Lecture Hall, 4/F, Duke of Windsor Social Service Building, 15 Hennessy Road, Wan Chai, Hong Kong	The Secretariat of FMSHK Tel: 2527 8898 Fax: 2865 0345

Answers to Radiology Quiz

Answers:

1. Volume loss in the left hemithorax, depicted as diaphragmatic elevation with shifting of the trachea and mediastinum to the left hemithorax. The right lung is hyperinflated. The left hilar shadow is absent.

2. The left pulmonary artery is absent. Right sided aortic arch and descending aorta are noted. Collaterals are noted from the bronchial arteries in the posterior mediastinum.

3. Proximal interruption of the left pulmonary artery. It is an uncommon developmental anomaly. The left pulmonary artery ends blindly at the hilum, and blood is supplied to the lungs through collateral systemic vessels. Right pulmonary interruption is more common than the left.

4. Right aortic arch and other congenital cardiovascular anomalies, most commonly Tetralogy of Fallot.

5. Recurrent pulmonary infections causing secondary bronchiectasis, haemoptysis due to rupture of hypertrophied collaterals, pulmonary hypertension, and exertional dyspnoea.

6. Hypogenetic lung syndrome, Swyer-James syndrome, Chronic thromboembolic occlusion, Takayasu arteritis, Mediastinal fibrosis.

Dr Andrew CHENG
MBBS (HK) FRCR(UK)
Resident, Department of Radiology, Queen Mary Hospital

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0 RESISTANCE
up to 48 weeks[1]

REDUCED ARV EXPOSURE
and potential for associated toxicities[2,3]

BECAUSE NO ONE SHOULD TAKE MORE MEDICINES THAN THEY NEED

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dolutegravir

POWERED BY DTG AT THE CORE

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Abbreviated prescribing information

Tivicay Tablets (Dolutegravir) 50mg **Therapeutic indication:** Indicated in combination with other anti-retroviral medicinal products for the treatment of Human Immunodeficiency Virus (HIV) infected adults and adolescents above 12 years of age. **Posology and method of administration:** *Patients infected with HIV-1 without documented or clinically suspected resistance to the integrase class:* Tivicay 50 mg (1 tablet) orally once daily. Co-administered some medicines for example efavirenz, nevirapine, tipranavir/ritonavir, or rifampicin: twice daily. *Patients infected with HIV-1 with resistance to the integrase class (documented or clinically suspected):* Tivicay 50 mg twice daily. Avoid co-administration of Tivicay with efavirenz, nevirapine, tipranavir/ritonavir, or rifampicin. Missed doses: Take Tivicay as soon as possible, providing next dose is not due within 4 hours. If next dose is due within 4 hours, patient should not take the missed dose and simply resume the usual dosing schedule. *Adolescents (aged from 12 to 17 years and weighing ≥ 40 kg) infected with HIV-1 without resistance to the integrase class:* Tivicay 50mg once daily. Elderly: Limited data available. No evidence that elderly patients require a different dose than younger adult patients. *Renal impairment:* No dosage adjustment required for patients with mild, moderate or severe (CrCl <30 mL/min, not on dialysis) renal impairment. *Hepatic impairment:* No dosage adjustment required in patients with mild or moderate hepatic impairment (Child-Pugh grade A or B). Use with caution in patients with severe hepatic impairment (Child-Pugh grade C). *Children aged <12 years or weighing <40 kg:* Safety and efficacy not yet established. Oral use. Taken with or without food. In the presence of integrase class resistance, Tivicay should preferably be taken with food to enhance exposure (particularly in patients with Q148 mutations). **Contraindications:** Hypersensitivity to the active substance or to any of the excipients. Co-administration with dofetilide. **Warnings & precautions:** *Integrase class resistance of particular concern:* Decision to use dolutegravir in the presence of integrase class resistance should take into account that dolutegravir activity is considerably compromised for viral strains harbouring Q148+≥2 secondary mutations from G140A/C/S, E138A/K/T, L74I. *Hypersensitivity reactions:* Discontinue dolutegravir and other suspect agents immediately if signs or symptoms of hypersensitivity reactions develop (including, but not limited to, severe rash or rash accompanied by raised liver enzymes, fever, general malaise, fatigue, muscle or joint aches, blisters, oral lesions, conjunctivitis, facial oedema, eosinophilia, angioedema). Monitor clinical status including liver aminotransferases and bilirubin. *Immune Reactivation Syndrome:* Monitoring of liver biochemistries is recommended in patients with hepatitis B and/or C co-infection. Particular diligence should be applied in initiating or maintaining effective hepatitis B therapy when starting dolutegravir-based therapy in hepatitis B co-infected patients. Opportunistic infections: Patients remain under close clinical observation of these associated HIV diseases by physicians. Drug interactions: Avoid factors that decrease dolutegravir exposure in the presence of integrase class resistance (e.g. magnesium/aluminium-containing antacid, iron and calcium supplements, multivitamins and inducing agents, etravirine (without boosted protease inhibitors), tipranavir/ritonavir, rifampicin, St. John's wort and certain antiepileptic drugs). A dose adjustment of metformin should be considered when starting and stopping coadministration of dolutegravir with metformin. Osteonecrosis: Patients should be advised to seek medical advice if they experience joint aches and pain, joint stiffness or difficulty in movement. Interactions: Avoid factors that decrease dolutegravir exposure in the presence of integrase class resistance. Medicinal products that induce enzymes UGT1A3, UGT1A9, *CYP3A4*, Pgp, and BCRP may decrease dolutegravir plasma concentration and reduce the therapeutic effect of dolutegravir. Co-administration of dolutegravir and other medicinal products that inhibit these enzymes may increase dolutegravir plasma concentration. Absorption of dolutegravir is reduced by certain anti-acid agents. Co-administration with St. John's wort is strongly discouraged. Magnesium/aluminium-containing antacid, calcium supplements, iron supplements or multivitamins should be taken well separated in time from the administration of dolutegravir (minimum 2 hours after or 6 hours before). **Pregnancy & lactation:** Limited amount of data in pregnant women. Use during pregnancy only if the expected benefit justifies the potential risk to the foetus. Not recommend HIV infected women to breast-feed their infants under any circumstances in order to avoid transmission of HIV. No data on effects on human fertility. **Adverse reactions:** Very common: Headache, Nausea, Diarrhoea Common: Insomnia, Abnormal dreams, Depression, Dizziness, Vomiting, Flatulence, Upper abdominal pain, Abdominal pain, Abdominal discomfort, Rash, Pruritus, Fatigue, Alanine aminotransferase (ALT) and/or Aspartate aminotransferase (AST) elevations, Creatine phosphokinase (CPK) elevations. **Overdose:** No specific treatment for overdose. Patient should be treated supportively with appropriate monitoring as necessary. Abbreviated Prescribing Information based on PI version GDS06v1(hk)/ EMEA20150818.

TC 150 mg film-coated tablets (Lamifudine). **Therapeutic indication:** 3TC is indicated as part of antiretroviral combination therapy for the treatment of Human Immunodeficiency Virus (HIV) infected adults and children. **Posology and method of administration:** 3TC may be administered with or without food. The tablet(s) should ideally be swallowed without crushing. 3TC oral solution is available for children over three months of age and who weigh less than 14 kg or for patients who are unable to swallow tablets. Alternatively, for patients who are unable to swallow tablets, the tablet(s) may be crushed and added to a small amount of semi-solid food or liquid, all consuming immediately. Adults, adolescents and children (weighing at least 25kg), the recommended dose of 3TC is 300 mg daily. This may be administered as either 150 mg twice daily or 300 mg once daily. Children weighing ≥ 20 kg to <25 kg, the recommended dose is 225 mg daily. Children weighing 14 to <20 kg, the recommended dose is 150 mg daily. Children from three months of age: it is recommended that the 3TC 150 mg scored tablet formulation is used. Children less than three months of age, the limited data available are insufficient to propose specific dosage recommendations. Patients changing from the twice daily dosing regimen to the once daily dosing regimen should take the recommended once daily dose approximately 12 hours after the last twice daily dose, and then continue to take the recommended once daily dose approximately every 24 hours. Older people, no specific data are available; Renal impairment, lamivudine concentrations are increased in patients with moderate - severe renal impairment due to decreased clearance. The dose should therefore be adjusted, using oral solution presentation of 3TC for patients whose creatinine clearance falls below 30 ml/min. Hepatic impairment, data obtained in patients with moderate to severe hepatic impairment shows that lamivudine pharmacokinetics are not significantly affected by hepatic dysfunction. Based on these data, no dose adjustment is necessary in patients with moderate or severe hepatic impairment unless accompanied by renal impairment. **Contraindications:** Hypersensitivity to the active substance or to any of the excipients. Not recommend the combination of lamivudine with cladribine. **Warnings & precautions:** 3TC is not recommended for use as monotherapy. Renal impairment: In patients with moderate to severe renal impairment, the dose should be adjusted. Pancreatitis: Pancreatitis has been observed in some patients receiving lamivudine. Treatment with 3TC should be stopped immediately if clinical signs, symptoms or laboratory abnormalities suggestive of pancreatitis occur until pancreatitis excluded. Lactic acidosis/severe hepatomegaly with steatosis: Lactic acidosis and severe hepatomegaly with steatosis, including fatal cases, have been reported with the use of antiretroviral nucleoside analogues either alone or in combination, including lamivudine. A majority of these cases have been in women. Caution should be exercised when administering lamivudine, particularly to those with known risk factors for liver disease. Treatment with lamivudine should be suspended in any patient who develops clinical or laboratory findings suggestive of lactic acidosis with or without hepatitis (which may include hepatomegaly and steatosis in even in the absence of marked transaminase elevations). Serum lipids and blood glucose: Serum lipid and blood glucose levels may increase during antiretroviral therapy. Immune Reconstitution Syndrome: In HIV-infected patients with severe immune deficiency at the time of initiation of anti-retroviral therapy (ART), an inflammatory reaction to asymptomatic or residual opportunistic infections may arise and cause serious clinical conditions, or aggravation of symptoms. Typically, such reactions have been observed within the first few weeks or months of initiation of ART. Relevant examples are cytomegalovirus retinitis, generalised and/or focal mycobacterial infections and Pneumocystis jiroveci (P. carinii) pneumonia. Any inflammatory symptoms must be evaluated without delay and treatment initiated when necessary. Autoimmune disorders (such as Graves' disease, polymyositis and Guillain-Barre syndrome) have also been reported to occur in the setting of immune reconstitution, however the time to onset is more variable, and can occur many months after initiation of treatment and sometimes can be an atypical presentation. Patients co-infected with Hepatitis B virus: Clinical trial and marketed use of lamivudine, have shown that some patients with chronic hepatitis B virus (HBV) disease may experience clinical or laboratory evidence of recurrent hepatitis upon discontinuation of lamivudine, which may have more severe consequences in patients with decompensated liver disease. If lamivudine is discontinued in a patient with HIV and HBV coinfection, periodic monitoring of both liver function tests and markers of HBV replication should be considered. Oral solution: Diabetic patients should be advised that an adult dose contains 3 g of sucrose. Children: Children who at anytime received lamivudine oral solution concomitantly with other antiretroviral oral solutions in clinical trials experienced lower rates of virological suppression, had lower plasma lamivudine exposure and developed viral resistance more frequently than children receiving tablets. **Interactions:** Lamivudine is predominantly eliminated by active organic cationic secretion. The possibility of interactions with other medicinal products administered concurrently should be considered, particularly when their main route of elimination is active renal secretion via the organic cationic transport system e.g. trimethoprim. Other active substances (e.g. ranitidine, cimetidine) are eliminated only in part by this mechanism and were shown not to interact with lamivudine. Zidovudine: A modest increase in Cmax (28%) was observed for zidovudine when administered with lamivudine, however overall exposure (AUC) was not significantly altered. Zidovudine had no effect on the pharmacokinetics of lamivudine (see Pharmacokinetics). Trimethoprim/sulphamethoxazole: Administration of trimethoprim/sulphamethoxazole 160 mg/800 mg (co-trimoxazole) causes a 40% increase in lamivudine exposure because of the trimethoprim component. However, unless the patient has renal impairment, no dosage adjustment of lamivudine is necessary (see Dosage and Administration). Lamivudine has no effect on the pharmacokinetics of trimethoprim or sulphamethoxazole. The effect of co-administration of lamivudine with higher doses of co-trimoxazole for the treatment of Pneumocystis carinii pneumonia and toxoplasmosis has not been studied. Zalcitabine: Lamivudine may inhibit the intracellular phosphorylation of zalcitabine when the two medicinal products are used concurrently. Lamivudine is therefore not recommended to be used in combination with zalcitabine. Emtricitabine: Lamivudine may inhibit the intracellular phosphorylation of emtricitabine when the two medicinal products are used concurrently. Additionally, the mechanism of viral resistance for both lamivudine and emtricitabine is mediated via mutation of the same viral reverse transcriptase gene (M184V) and therefore the therapeutic efficacy of these drugs in combination therapy may be limited. Lamivudine is not recommended for use in combination with emtricitabine or emtricitabine-containing fixed dose combinations. **Pregnancy & lactation:** Lamivudine has been evaluated in the Antiretroviral Pregnancy Registry in over 11,000 women during pregnancy and postpartum. Available human data from the Antiretroviral Pregnancy Registry do not show an increased risk of major birth defects for lamivudine compared to the background rate. However, there are no adequate and well-controlled trials in pregnant women and the safe use of lamivudine in human pregnancy has not been established. Studies in humans have confirmed that lamivudine crosses the placenta. Use in pregnancy should be considered only if the benefit outweighs the risk. Although the results of animal studies (see Non-Clinical Information) are not always predictive of human response, the findings in the rabbit suggest a potential risk of early embryonic loss. Health experts recommend that where possible women infected with HIV do not breast feed their infants in order to avoid the transmission of HIV. In settings where formula feeding is not feasible, local official lactation and treatment guidelines should be followed when considering breast feeding during antiretroviral therapy. In a study following repeat oral dose of either 150 mg lamivudine twice daily (given in combination with 300 mg zidovudine twice daily) or 300 mg lamivudine twice daily, lamivudine was excreted in human breast milk (0.5 to 8.2 micrograms/ml) at similar concentrations to those found in serum. In other studies following repeat oral dose of 150 mg lamivudine twice daily (given either in combination with 300 mg ziovudine or as Combivir or Trizivir) the breast milk:maternal plasma ratio ranged between 0.6 and 3.3. Lamivudine median infant serum concentrations ranged between 18 and 28 ng/mL and were not detectable in one of the studies (assay sensitivity 7 ng/mL). Intracellular lamivudine triphosphate (active metabolite of lamivudine) levels in the breastfed infants were not measured therefore the clinical relevance of the serum concentrations of the parent compound measured is unknown. **Adverse reactions:** Common: Headache, insomnia, cough, nasal symptoms, nausea, vomiting, abdominal pain or cramps, diarrhea, rash, alopecia, arthralgia, muscle disorders, fatigue, malaise, fever. **Overdose:** No additional safety issues have been identified in paediatric subjects receiving either once or twice daily dosing compared to adults. Limited data are available on the consequences of ingestion of acute overdoses in humans. If overdosage occurs the patient should be monitored, and standard supportive treatment applied as required. Abbreviated Prescribing Information based on PI version: HK012017(GDS22/eMC20160714).

Important Safety Information:

- The recommended dose of dolutegravir is 50 mg (one tablet) twice daily for patient with resistance to integrase class (documented or clinically suspected)
- 3TC is not recommended for use as monotherapy.
- Precautions on occurrence of pancreatitis and Immune Reconstitution Syndrome and increased serum lipids, blood glucose.

Please read the full prescribing information prior to administration. Full prescribing information is available on request from GlaxoSmithKline Ltd, 23/F, Tower 6, The Gateway, 9 Canton Road, Tsimshatsui, Kowloon, Hong Kong. For adverse events report, please call GlaxoSmithKline Limited at (852) 9046 2498. This material is for the reference and use by healthcare professionals only.

References: 1. Cahn P et al. Presented at: International AIDS Conference; July 23-27, 2018; Amsterdam, Netherlands. **2.** Tivicay Hong Kong Prescribing Information 2017. **3.** 3TC Hong Kong Prescribing Information 2017.

WORKING ON BEHALF OF ViiV HEALTHCARE IN HIV

GlaxoSmithKline Limited
23/F, Tower 6, The Gateway, 9 Canton Road, TsimShaTsui, Kowloon, Hong Kong Tel. (852) 3189 8989 Fax.(852) 3189 8931

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