by incising the scar tissue. Meanwhile, considering the circum-
stantial possibility of block of the upper end of the MT, the
anaesthesia circuit (circle system) was connected to the ante-
rior limb of MT using an appropriate size TT connector. This
enabled us to ventilate the child without any leak from the
upper end of the MT. The pulse oximeter saturation picked up
(on 100% oxygen) and a visible chest rise could be appreciated
(although the chest compliance seemed poor on bag ventila-
tion). After ventilation for a few minutes, the haemodynamics
became stable and ventilation was continued from the exter-
nal limb without any detectable oral leak. An endoscopic as-
essment of the upper airway revealed mucosal overgrowth
completely obstructing the top lumen of the MT (Fig. 1). The
MT was removed and replaced with the flexometallic TT
inserted through the orifice initially accommodating the exter-
nal limb of the MT. An intraoperative fluoroscopic chest assess-
ment to evaluate the possible cause of decreased compliance
showed bilateral lung lower zone loculated pneumothorax.

The airway was finally secured using a tracheostomy tube
and on consultation with a chest physician, a computed tom-
ography (CT)-guided chest tube/pigtail catheter insertion was
planned subsequently.

The present case illustrates that an apparently normal
functioning MT after operation could lead to a potentially life-
threatening hazard. The child had no predictors suggestive of
difficult mask ventilation and had no respiratory obstruction
after operation. The possibility of occlusion of the upper end
of the MT could only be considered when bag-mask ventilation
completely failed. Such a complication with an MT has not pre-
viously been reported. As a remedy to prevent such accidents,
we suggest that during preoperative evaluation, the anterior
limb of MT should be occluded and ensured that the child
continues to breathe normally without developing signs of re-
spiratory distress/airway obstruction. In situations like the
present case where tissue overgrows the upper end of the
MT, occlusion of the anterior limb shall block the only patent
airway path, thus presenting with signs of distress. Moreover,
this will not only detect complete occlusion but can also
predict a partial occlusion significant enough to cause intra-
operative ventilatory difficulties.

Declaration of interest
None declared.

S. Sethi\textsuperscript{1}

P. M. Singh\textsuperscript{2,*}
A. Borle\textsuperscript{2}
\textsuperscript{1}Chandigarh
\textsuperscript{2}New Delhi, India
\textsuperscript{*E-mail: preetrajpal@gmail.com}

1 Prasanna Kumar S, Ravikumar A, Senthil K, Somu L, Nazrin MI. Role of
Montgomery T-tube stent for laryngotracheal stenosis. Auris Nasus
Larynx 2014; 41: 195 – 200

2 Agrawal S, Payal YS, Sharma JP, Meher R, Varshney S. Montgomery

Virtual laryngoscopy and combined
laryngoscopic–bronchoscopic approach
for safe management of obstructive upper
airways lesions

Editor—The airways management of patients with large ob-
structive pharyngo-laryngeal mass can be very challenging.
On such occasions, we believe that there could be three key
factors for a safe and successful approach.

A patient presented to the Ear–Nose–Throat clinic com-
plaining of oral haemorrhages and progressive shortness of
breath. A fibroscopic exam found a non-passable lesion at pha-
yngeal level. During the pre-anaesthetic assessment, before
the surgical biopsy, the patient refused the options of awake
fibroscopic intubation or awake tracheostomy, despite being
informed of the difficult airway management.

In view of such a challenge, we organized a multidisciplinary
team (MDT) meeting deciding to perform a modified (‘sniffing
position’) CT scan, and to use it for performing a 3D reconstruc-
tion (virtual laryngoscopy, VL), to stratify the airways difficulty
and to assess the involvement of vocal cords.

The CT scan showed a lesion occupying the vast majority of
the pharynx (Fig. 1a). The VL confirmed the obstruction of the
upper airways (Fig. 1b), a severely restricted subepiglottic
region (Fig. 1c) but spared vocal cords (Fig. 1d).

The obstructive lesion was considered as hindrance to
optimal laryngoscopic view, and also as an obstacle in directing
the tracheal tube. These considerations, together with the risk
of bleeding, convinced us in proceeding directly via a fibroptic–
bronchoscopic approach. Nonetheless, in view of a challenging
passage of the bronchoscope through the stenotic and collapsing
airways after induction of anaesthesia, we decided to perform a
combined two-operator technique, using a video-laryngoscope
to facilitate the introduction of the bronchoscope. The video-
laryngoscope was used in first instance in order to prospectively
compare the real-time images with the VL findings. The real-
time view confirmed the VL images. The video-laryngoscope
only would have been enough to perform a safe intubation
(Cormack–Lehane grade III and posterior wall bulging; Fig. 1e–g).
The fibroptic-bronchoscope was easily introduced under video-
laryngoscope guidance (Fig. 1r), withatraumatic passage through
the stenosis and the intact vocal cords (Fig. 1h and i). The
manoeuvre was accomplished within 80 s.

On reflection, a timely organized MDT meeting allowed a
positive interaction with the radiologist. The modified CT scan
in ‘sniffing position’ with VL imaging reconstruction was
criucial by confirming the possibility to pass the tracheal tube
through the spared vocal cords, once overrun the stenosis.
We believe that this approach is helpful and easily reproducible
in any patient with a neck lesion causing airway obstruction, in-
creasing the safety of a difficult airways management.
Moreover, virtual processing of CT imaging of the laryngeal region is commonly performed to supplement the endoscopic workout, especially for non-passable stenosis.\textsuperscript{1,2}

Another learning point is the use of a combined laryngoscopic–bronchoscopic technique. A similar technique has been previously described with the use of conventional laryngoscope and Bonfils’ rigid fibrescope,\textsuperscript{3} and more recently combining a video-laryngoscope (Glidescope\textsuperscript{®}) and flexible fibreoptic-bronchoscope.\textsuperscript{4} In a recent manikin study performed using the Airtraq\textsuperscript{®} with or without the aid of fibreoptic-bronchoscope, the combined technique significantly reduced timing for intubation in difficult laryngoscopy scenarios (Cormack–Lehane grade IIB–III–IV).\textsuperscript{5} The main advantages of using a bronchoscope, especially the flexible one, are the better visualization of the anatomical structures and the possibility to smoothly guide the tracheal tube through the stenosis reducing the risks of trauma/bleeding.

In conclusion, the VL imaging can be extremely useful for the perioperative management of patients with obstructive upper airway lesion. Moreover, a combined technique allows a safe management by facilitating the passage of the fibreoptic-bronchoscope through the obstructed region while decreasing the risk of failed intubation and/or airways trauma. Nevertheless, large studies are warranted to establish the usefulness of this technique, which could be implemented in the protocols for the management of expected difficult airways.

Declaration of interest

None declared. The patient gave his written consent to this procedure and to the imaging storage for teaching and publication purposes.

F. Sgalambro
F. Sanfilippo*
C. Santonocito
C. Caltavuturo
C. Grillo
Catania, Italy

*E-mail: filipposanfi@yahoo.it

Fig 1 Comparing different views. (a) CT sagittal scan in sniffing position showing the pharyngeal mass extending into the larynx. VL with reconstruction of upper airways (α), subepiglottic (γ), and vocal cords (β) regions. (γ and δ) Laryngoscopic views with facilitated passage of the bronchoscope. Bronchoscopic views of upper airways (α), subepiglottic (γ), and vocal cords (β) regions.
Under pressure? Alopecia related to surgical duration

Editor—We would like to share a rare and preventable case of pressure alopecia that emphasizes the importance of intraoperative pressure relieving manoeuvres. Figure 1 is a photograph of a 49-yr-old man who reported patches of hair loss during a postoperative follow-up appointment. Three weeks prior to the consultation, he had undergone a lengthy microsurgical procedure. A large morphoeic basal cell carcinoma was resected from his left cheek. A free anterolateral thigh flap was used to reconstruct the defect in a procedure that took 9 h and 45 min. The patient had a past medical history of myocardial infarction (MI), anxiety state, and he smoked 15 cigarettes a day.

Figure 1 demonstrates a ring-shaped pattern of alopecia. This was assumed to be due to prolonged pressure-related ischaemia of the hair follicles caused by prolonged intraoperative immobilization with the patient lying supine with the scalp rested in a head ring. Fortunately, the hair growth returned and was near normal at 6 months.

There are many cases of similar pressure-related postoperative alopecia documented. It may present within the first postoperative week as a swollen, painful, or ulcerated area on the scalp or as alopecia at postoperative clinic visits; most present within 1 month of surgery. The alopecia may be scarring or non-scarring, temporary or permanent. The aetiology is thought to be due to prolonged pressure leading to local hypoxia and tissue ischaemia and is associated with anaesthetic immobilization with the highest risk of permanent hair loss in those patients undergoing periods of anaesthesia over 24 h.

One review article documented occurrence in operations with as short an anaesthetic time as 3 h (median 6 h), while another in a paediatric population ranged from 4.4 to 7.1 h. Hypotension and hypoxaemia may be contributing factors while the Trendelenburg position, obesity, and psychiatric disorders have been implicated as linked. In the patient we present, the lowest arterial pressure documented in the intraoperative period was 80/50 and he remained normothermic throughout, but the history of ischaemic heart disease is suggestive of microvascular pathology that may have contributed to the development of alopecia.

Figure 1 demonstrates a ring of alopecia, indicating that the patient was positioned on a gel head ring. Such a pressure-relieving device is instigated precisely to alleviate such tissue trauma. We surmise that a head ring is not sufficient prophylaxis in cases of prolonged anaesthetic immobilization typical of microsurgical reconstructive procedures (previously suggested as a solution). While many case reports support resolution of alopecia within several months, treatment options with topical corticosteroids or minoxidil have no proven efficacy and therefore vigilance about positioning and primary prevention are important. We would like to stress the importance of regular pressure relieving manoeuvres to guard against postoperative alopecia. Vigilance for the condition along with regular head repositioning (one study suggested 30 min intervals) and scalp massage should be considered if permitted by the nature of surgery. Consideration for the need for specific head rests including head rings should be made. Patients should be counselled for rare but possible risk of hair loss within the preoperative anaesthetic visit in those patients deemed at increased risk.

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Declaration of interest

None declared.