4. Research in laryngotracheal stenosis: Indian scenario

Very few, but substantial research and contribution in the field of PILTI and PILTS is available from our country. These prospective studies are reviewed.

In a multivariate prospective study from south India, Rangachari et al. (2006) identified laryngeal abnormalities in 41 of the 51 post-intubated patients who were included in the study. The most common laryngeal findings were vocal cord erythema (50%), arytenoid oedema (24%) and vocal cord granuloma (8%) at the time of extubation. At 3 weeks post-extubation only 10 patients had abnormal laryngeal finding in the form of vocal cord granuloma (68%) and arytenoid oedema. The larger size of the endotracheal tube, emergency intubation and prolonged intubation were the variables that were found to have statistically significant association with laryngeal sequelae at 3 weeks after extubation. Pookamala et al. (2014) identified prolonged intubation as the most important cause of LTS. Mahabalesh and Nagesh (2007) in a post-mortem study of post-intubation laryngotracheal specimens observed that almost all specimens had evidence of LTI. Ulceration in the postero-lateral wall of the larynx and anterior wall of trachea was the most striking feature. The severity of lesion increased with the duration of intubation.

Prasanna and Ravikumar (2014) reported that the internal dimensions of the subglottis and upper trachea of the adult Indian population are less that that reported in western literature. Joshi et al. (2011) studied 50 laryngeal
preparations from the adult western Indian population. They concluded that
the morphology of the cricoid cartilage varies between different population
groups and this could be because of difference in body shape and race.
Hence, they suggested that appropriate size endotracheal tube should be
used keeping in mind the variations that could occur between populations.
Gupta et al. (2012) observed that the size of the endotracheal tube that could
be safely used for intubation in children can be reliable assessed by using
ultrasonography to measure the subglottic diameter prior to intubation. Panda
et al. (1996) recommended the routine use of flexible laryngoscopic
evaluation post- extubation to evaluate and identify the LTI so that permanent
sequelae can be prevented with early recognition and treatment.

There is paucity of prospective studies in Indian literature about
prevention of PILTS. Nandakumar et al. (2011) in a retrospective case study
of 12 patients have found MC to be useful in preventing restenosis after
resection anastomosis. Madan et al. (2012) in a prospective case series have
observed that MC is not useful in prevention of restenosis following
bronchoscopic dilatation of post intubation tracheal stenosis.

Experimental animal studies in regards to PILTS are very few. Sen et
al. (1988) studied the effects of short period of intubation in 24 dogs using the
red rubber tube and the PVC tubes. They found that tracheal damage was
much less when PVC was used and the extent of injury was directly related to
the amount of pressure exerted on the tracheal mucosa.

Pacifica (1986) studied the various surgical options for management of
tracheal stenosis in 20 dogs and correlated these results with their clinical
experience. The author found that autogenous materials were more successful than homograft for the tracheal stenosis. Kumar et al. (2012) has reported a successful replacement of trachea in a cow that suffered from tracheal stenosis with acellular aortic graft from a buffalo. This cow has survived for 2.5 year post-transplant.

No prospective experimental animal studies from India have been reported so far in regards to pathogenesis and modulation of wound healing after PILTI.