Loupe assisted parotidectomy and thyroidectomy: Should this be the standard of care?

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The use of magnification has revolutionized the modern-day otolaryngology practice. The use of surgical loupe in Head and Neck surgery is an important tool in improving precision and accuracy and is now the standard of care for many ENT surgeries. Furthermore it has been shown to reduce complications.

Parotidectomy and thyroidectomy are intricate surgeries where nerve injury can cause significant morbidity. Intraoperative nerve monitoring is considered as standard of care, however cost constraints in the emerging economies limit its usage. Although loupes are used extensively in dental practice and plastic surgery (1) (2), data regarding its use in Head & Neck surgery is sparse (3). Surgical loupes with good optics, can improve the outcome of major head and neck surgery by improving resolution and magnification.

The aim of this retrospective study was to analyse the complications in parotidectomy and thyroidectomy surgeries conducted using surgical loupes.

Methods

This retrospective study was conducted at Department of ENT & Head and Neck surgery, People Tree Hospitals, Bangalore. Informed written consent was obtained for each patient regarding surgery and data analysis. The clinical protocol for this study was approved by the PTH IRB.

All the loupe assisted Thyroidectomies and Parotidectomies which were performed in this institution were included in the study. All surgeries were performed with 2.5 X magnification loupes by a team of doctors (3).

A total of 51 cases (35 thyroidectomies and 16 parotidectomies) conducted with loupe magnification(fig1) were reviewed (2015-18).

Clinical information was collected on sex, age, thyroid disease and parotid disease and final histology. In particular, the incidence of complications related to injuries of recurrent laryngeal nerve (RLN) and parathyroid glands in cases of thyroidectomy and facial nerve palsy during parotid surgery were collected.

Results

Of the 16 parotidectomies undertaken, one patient with advanced parotid tumour needed resection of the marginal mandibular nerve. The remainder of cases showed no permanent injury to the facial nerve (fig 2). Three had neuropraxia of marginal mandibular nerve which resolved with time.

Of the 35 thyroidectomies undertaken, one patient had temporary recurrent laryngeal nerve paralysis which recovered. One patient had temporary hypocalcaemia for 2 weeks needing correction of magnesium along with calcium. All the patients were operated with an intent to save the nerves.

Parotidectomy step by step approach

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Discussion

The application of magnification has revolutionized microvascular and reconstructive surgery. Its application in head and neck onco-surgery has been somewhat sparse. Magnification using binocular loupes in general, have a magnification from 2.5x to 5x, Loupes should preferably be custom made, to take into account corrected vision and interpupillary distance and the use of prescription glasses. Other considerations are the field of view, depth of field, and the working distance. Smaller magnifications have wider field at the expense of tissue details however most ablative head and neck surgeries do not require more than 3.5x. A comfortable working distance is paramount to prevent body angulations and strain.

There are some disadvantages especially if the loupes are not customised. They can be cumbersome because of fogging, neck strain and fatigue. Stereo acuity and depth of perception are reduced with increasing magnification. These problems can be overcome by customised loupes and regular usage in all available situations. We encourage surgeons to use loupe magnification during their training and in all available disciplines of Head and Neck Surgery more particularly in thyroid and parotid surgery.

Although it is difficult to clearly establish the benefits of loupes in Head and neck surgery (mainly thyroid surgery) a large series of loupe assisted surgery by D Orazi et al, have reported that out of 782 patients who underwent Thyroid surgery, six patients (0.77%) had temporary unilateral vocal fold immobility in the postoperative period and all six patients recovered subsequently with medical management. In 84 patients, there were signs and symptoms of hypocalcemia. Among them 81 patients recovered between 2 and 6 weeks postoperatively. In 3 patients (0.38%) there was permanent hypocalcemia.

Testini et al (4) evaluated the outcomes of Thyroidectomies by a randomised controlled study and found that use of loupe magnification with microsurgical instruments reduced morbidity, improved surgical time and aided recurrent laryngeal nerve identification in comparison to those patients who did not have loupe assisted surgery. Surprisingly there is no data on loupe assisted parotid surgery in literature.

Conclusions

Use of microsurgical techniques during parotidectomy and thyroidectomy maybe a alternative to nerve monitoring (which is expensive) and should be the standard of care as it reduces morbidity and minimises nerve injury. This may be of importance in resource limited economies.

thyroidectomy

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Published on Jan 18, 2018

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The advantages of wearing a surgical loupe during surgery:

- Magnification- everything looks bigger
- Clarity- everything looks better
- Ergonomic - Improves the surgeons posture during surgery and avoids back pain and neck pain due to bending.
- Improved comfort
- Increased precision
- Protection to the eyes from spillage of body fluids

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