Endoscopic Assisted Neck Dissection via Retro Auricular Approach Versus Conventional Technique

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Abstract

Background Most standard surgical treatment of cervical lymph node metastasis of Head and neck cancer is Conventional neck dissection. Recently, the skin incision has been modified to smaller incision than previous by using a special technique such as Robotic surgery system. In unavailable special system, we have to apply our instruments to do neck dissection via modified incision. The aim of our study was to compare surgical outcomes of Endoscopic assisted neck dissection and conventional neck dissection.

Method From March 2013 to August 2013, 70 patients with cervical lymph node metastasis of head and neck cancer were enrolled in this study. Of these patients, 10 patients desired the endoscopic assist retro-auricular neck dissection, and 60 patients were done conventional approach. Demographic data were recorded. Total excised lymph nodes and total operation time of both groups were compared.

Result The mean total excised lymph nodes was no statistical different between two groups. However, mean total operative time of endoscopic assisted technique was longer than conventional approach, but there was no statistical different between two groups. Patients with retro auricular neck dissection are better aesthetic outcome and less local skin flap swelling.

Conclusion In unavailable Robotic surgery system situation, we can apply existing instrument to do endoscopic assisted retro-aureicular which gave us a good aesthetic outcome but do not compromise to the disease control approach outcome.

INTRODUCTION

Conventional neck dissection with standard skin incision for removing lymphatic and non-lymphatic structures has been accepted to treat both therapeutic and diagnostic aims for many decades. Recently, the standard skin incision was applied to various modern incisions and techniques. Benefits from these techniques were widely accepted, but the consequences were still discussed. Poor cosmetic outcome and local swelling that interfering long term neck examination are the major concerned. Robot-assisted technique is one of the solutions; the varied success rates were reported by many studies [1-6]. The major problem of this technique are the cost and not widely available.

In our institute, many patients also suffer from the standard technique and robotic surgery is not available. So we try to modify technique with our instruments.

MATERIALS AND METHODS

All oral cavity cancers patients (T1-T4) who need en-bloc surgical neck dissection (with or without primary site procedure) were discussed about the plan of treatment, conventional or endoscopic neck dissection, from March 2013 to August 2013 in ENT department Rajavithi hospital. Patients who who concern about the neck scar will be advised to perform endoscopic assisted retro-auricular neck dissection and the rest will be underwent conventional neck dissection. For these conditions are the indications for endoscopic assisted neck dissection.

- Controllable for both primary site and neck
- No history of previous treatment; surgery, radiotherapy or chemotherapy.
- Neck node N0-N1, no grossly capsular involvement (movable lymph node).
- Primary can be excised intraorally.
- Intact skin lesion of the neck.
- No contraindication for general anesthesia.

**SURGICAL TECHNIQUE**

**Patient Positioning**

Surgery had performed under general anesthesia. The position was supine, shoulder roll up, slightly neck extension and rotated the head to contra lateral side of dissection.

**Skin incision and operation setting (Retro auricular approach)**

Retro auricular skin incision or modified face-lift incision was designed (Figure 1), starting from lower end of the retro auricular sulcus and moving upward to the midpoint of the sulcus then curving downward inside the hairline about 0.5 cm (Figure 2). Subplatysmal skin flap was elevated by using monopolar cautery. In the deep part of creating subplatysmal flap, surgeon needed headlight to visualize the surgical field and using long extension tip monopolar cautery. Subplatysmal skin flap was elevated by self retaining retractor (Chung’s retractor), working space was automatically created below the flap (Figure 3). During flap elevation below the mandible, we carefully dissected to prevent thermal injury to marginal mandibular branch of facial nerve. Most anterior border of surgical field was medial side of ipsilateral strap muscles and superior belly of omohyoid muscle was identified inferiorly.

**Surgical technique**

We started the dissection of level IIa, IIb and III via direct vision which using conventional technique and usual instruments. First of all, we identified and preserved the marginal mandibular branch of facial nerve (Figure 4), then fibro-adipose tissue was separated from the inferior border of mandible. Next step, fibro-adipose tissue from anterior surface of sternocleidomastoid (SCM) muscle was dissected. After that, dissection of the inferior border of posterior belly digastric muscle and anterior border of SCM led to disclose the internal jugular vein. The transverse process of atlas can be palpated at this area where the spinal accessory nerve (CN XI) usually crosses the internal jugular vein. After identification of CN XI, fibro-adipose tissue of level IIb was dissected (Figure 5). The fibro-adipose tissue of level IIa and III were dissected toward to carotid sheath.

Fibro-adipose tissue and submaxillary gland in level I was dissected under endoscopic vision. We began to identify posterior belly of digastric muscle and then proximal facial artery was sealed with vascular clips. While pulling out the fibro-adipose tissue and sub maxillary gland, lingual nerve and hypoglossal nerve were safely preserved during dissection.
After identification mylohyoid muscle, sub maxillary ganglion and Wharton’s duct were sealed. Final step, we continue the dissection to anterior belly of digastric muscle and sub mental area (Figure 6). After completing the dissection, all removed specimen was sent for pathological study.

**Finishing the operation**

The surgical bed was irrigated with saline. Bleeding was checked and stopped via endoscope and direct vision, then closed suction drainage was placed. The wound was closed with simple interrupt suture (Figure 7). All patients were admitted and post operative care in the department of Otolaryngology Head and Neck surgery Rajavithi hospital. (Figure 8, 9). The pathologic report was advised to all patients.

**RESULTS**

All 70 neck dissections which done by the two surgeons are classified as Endoscopic assisted retroauricular neck dissection 10 cases, 14.29% and conventional neck dissection (conventional; 60 cases, 85.71%) depending on patient desire. Demographic data were reported in Table 1. Mean total excised lymph nodes was no statistical difference between two groups (23.00±19.04 vs 23.12±10.30; p = 0.985). Although endoscopic assisted retro-auricular approach used more operative time than conventional approach, but there was no statistical different between two groups (428.00±150.09 vs. 404.17±129.40; p = 0.60) (Table 2).

**DISCUSSION**

The standard treatment for neck disease both prophylactic and therapeutic aims are widely accepted for several decades to manage head and neck cancer. It gives excellent exposure, limited instruments needed; early detection and management of the complication are possible. But the major disadvantages are poor aesthetic outcome and long term local swelling of surgical area. Some patients are unacceptable for the disfiguring neck scar. Moreover, local swelling can cause both false positive and negative from neck examination during follow up. Many methods reducing postoperative consequences are introduced, main fashion for the modified technique mostly related with robot-assisted procedure, da Vinci Robotic system, which increase cost and not available worldwide. Skilled staff may need to be trained for maintaining the system. Park et al [4] showed that robotic approach was safe to perform for neck dissection in early
Central

Sannikorn et al. (2015)

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Table 1: Baseline characteristic demographic data.

<table>
<thead>
<tr>
<th></th>
<th>All Approaches (N=70)</th>
<th>Endoscopic group (n=10)</th>
<th>Conventional group (n=60)</th>
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<tbody>
<tr>
<td><strong>Mean SD Range</strong></td>
<td><strong>Mean SD Range</strong></td>
<td><strong>Mean SD Range</strong></td>
<td></td>
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<tr>
<td><strong>Age (years)</strong></td>
<td>53.34 1.52 24-80</td>
<td>54.9 18.06 26-74</td>
<td>53.08 11.8 24-80</td>
</tr>
<tr>
<td><strong>Sex, n (%)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>47 (61.10)</td>
<td>9 (90)</td>
<td>38 (63)</td>
</tr>
<tr>
<td>Female</td>
<td>23 (32.90)</td>
<td>1 (10)</td>
<td>22 (37)</td>
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<td><strong>Staging, n (%)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I</td>
<td>4 (5.70)</td>
<td>1 (10)</td>
<td>3 (5.00)</td>
</tr>
<tr>
<td>II</td>
<td>5 (7.10)</td>
<td>1 (10)</td>
<td>4 (6.67)</td>
</tr>
<tr>
<td>III</td>
<td>10 (14.30)</td>
<td>3 (30)</td>
<td>7 (11.67)</td>
</tr>
<tr>
<td>IVa</td>
<td>51 (72.90)</td>
<td>5 (50)</td>
<td>46 (76.66)</td>
</tr>
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</table>

Table 2: The results of group analyses according to the comparison of mean total excised lymph nodes and mean total operative times between two groups.

<table>
<thead>
<tr>
<th></th>
<th>Endoscopic group (n=10)</th>
<th>Conventional group (n=60)</th>
<th>p value</th>
<th>95% CI</th>
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<tr>
<td><strong>Mean total LN (nodes) ± SD</strong></td>
<td>23.00 ± 19.04</td>
<td>23.12 ± 10.30</td>
<td>0.985</td>
<td>-13.64 ; 13.87</td>
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<tr>
<td><strong>Mean total operative time (min.) ± SD</strong></td>
<td>428.00 ± 150.09</td>
<td>404.17 ± 129.40</td>
<td>0.60</td>
<td>-114.20 ; 66.36</td>
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laryngeal cancer. Lee et al [6] concluded that supra-omohyoid neck dissection was feasible for N0 squamous cell carcinoma of oral cavity tumor.

Our institute is also processing to provide the system, but at this time we try to find another solution to reduce postoperative consequence. We apply our instruments to perform neck dissection via retro-auricular or modified facelift approaches. Skilled surgeons use long instruments to perform neck dissection with telescope assisted, general data were compared between conventional and facelift approach. General aim to en-bloc removes lymphatic and non-lymphatic structure are the same. All preservative structures were carefully avoided from surgery. Post operative neck skin swelling in endoscopic neck trauma dissection group is lesser than conventional group and more rapid recovery.

About aesthetic outcome, from the surgeon’s point of view, endoscopic assisted retro auricular neck dissection is feasible to improve aesthetic acceptable with lower cost. About patients’ aspect, objective data about aesthetic satisfaction should be further studied. Long-term disease control and prognosis may need to be observed.

CONCLUSION

In expert surgeon, mean total excised lymph nodes and operative time were no significant different between using conventional and endoscopic assisted retro-auricular approach neck dissection. The serious complications such as major bleeding, vital structure injuries were not found in both groups.

REFERENCES


Cite this article