

MINIMALLY INVASIVE VIDEO-ASSISTED THYROIDECTOMY FOR THYROID NODULE

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Abstract:

Minimally invasive video-assisted technique have been recently applied to thyroid surgery. This study aims to review the outcome and compare complications between the minimally invasive video-assisted thyroidectomy (MIVAT) and that of conventional thyroidectomy.

Methods: This is a retrospective study reviewing the articles downloaded from medline search highwire press and springer. Only articles relevant to the study were reviewed. Cosmetic outcome, operative time, complications, post-operative pain and length of hospital stay are retrospectively evaluated.

Results: Cosmetic results were excellent for MIVAT as compared to conventional group. Operative times were significantly longer for MIVAT group and significantly shorter for conventional surgery. As to complications, there were no significant difference between the two groups. Post-operative pain is less significantly in the MIVAT group. Duration of hospital stay was lower in the MIVAT group as compared to the open surgery group.

Conclusion: Minimally invasive video-assisted thyroidectomy can be performed safely and effectively as conventional thyroidectomy and can be the operative treatment of choice in selected patient with small thyroid nodules.

Keywords: Thyroidectomy – Minimally Invasive – Video Assisted

Introduction:

Various endoscopic techniques for thyroid surgery were introduced nowadays since 1990's. Some of the reported techniques insufflates gas, other techniques without CO₂ insufflation and some utilized a cutaneous elevator to avoid potential adverse complications of CO₂ [1-12]. Despite of this technical revolution, many of these approaches were not established and it needs further evaluation as to its indications, safety, and feasibility to gain universal acceptance.

Objective of the Study:

This study aims to review the outcome and compare complications between the minimally invasive video-assisted thyroidectomy (MIVAT) and that of conventional thyroidectomy.

Subjects and Methodology:

This is a retrospective study reviewing the articles downloaded from medline search, highwire press and springerlink. Only articles pertaining to and relevant to minimally invasive video-assisted thyroidectomy in comparison with that of conventional thyroidectomy are included in this study. A total of 16 articles were downloaded but only 4 articles were included in the study. Patients were divided into two groups, the MIVAT group, and the open surgery group.

The cosmetic outcome, operative time, complications, post-operative pain and length of hospital stay are all evaluated.

Patient inclusion criteria:

1. Small size nodule less than 3.0 cm
2. Volume of nodule is less than 20.0 ml.
3. Nodule should be free from carcinoma

Exclusion Criteria:

1. Tumor size more than 3.0 cm
2. Presence of malignancy
3. Presence of thyroiditis
4. Previous neck or thyroid surgery
5. Previous neck irradiation

The Main Tasks of this Operation Consist of:

1. Preparation of the patient.
2. Creation of a 1.5 cm horizontal incision 2.0 cm above the sternal notch.
3. Dissection of subcutaneous fat and platysma.
4. Division of the cervical linea alba 3-4 cm longitudinally.
5. Strap muscles are deflected laterally with small retractors.
6. Insertion of the 30 degree 5mm endoscope under video.
7. Exposure of the thyrotracheal groove by spatula-shaped aspirator, forceps and scissors.
8. Isolation and ligation of middle thyroid vein and upper pole pedicle, sparing the superior laryngeal nerve.
9. Identification and sparing of recurrent laryngeal nerve.
10. Careful dissection of the posterior lobe with preservation of the parathyroid gland and its blood supply.
11. Hemostasis is done using vascular clips or ultrasonic scalpel.
12. Complete exteriorization of the glands.
13. Operation proceed as in open surgery under direct vision.
14. Isthmus is dissected from the trachea and divided.
15. The lobe is completely removed by the conventional open technique.
16. Check again the laryngeal nerve at this point to avoid injury.
17. Closure of wound by subcuticular suture or by skin glue.

Results:

In the study by Hegazy, M, et al, they evaluated a total of 68 patients comparing the minimally invasive video-assisted thyroidectomy versus that of minimally invasive open surgery (Sofferman technique). Two groups are comparable as to the extent of the surgery, age of the patient, and gender. They concluded that the MIVAT group had a longer operative time (115.4+_{33.5} minutes) as compared to the open technique group (65.6+_{23.7} minutes). In addition to that, the post-operative pain was less in the MIVAT group ($p < 0.05$) than the open technique group. However, they also noted that in terms of cosmetic outcome, both group have no significant difference ($p < 0.05$)[8].

In the study of Bellantone, R, et al, in which they evaluated 62 patients comparing the video-assisted versus conventional thyroid lobectomy. The following parameters were used; cosmetic outcome, post-operative pain, complications (bleeding, infection, recurrent nerve palsy). They have noted that patients who underwent the video-assisted surgery, were highly satisfied with the cosmetic outcome (mean +_{SD}, 9.2+_{0.5}) compare to the open conventional surgery (mean+_{SD}, 5.8 +_{0.7}) ($p < 0.001$). Moreover, the post-operative pain was significantly lower in the video-assisted group than the open surgery group ($p < 0.001$). The duration of hospital stay of the patients was lower in the video-assisted group (mean+_{SD}, 1.1+_{0.1} days) than the open surgery group (mean+_{SD}, 2.2 +_{0.2} days), but not statistically significant. It was also noted, that in terms of complications there were no significant differences between the two group [12].

In another article by Chung YS, et al, involving 301 patients they evaluated the completeness of thyroidectomy and comparing the complications of endoscopic thyroidectomy with that of conventional open thyroidectomy. They concluded that there were no statistical significant differences in the following sets of parameters: no difference in post-op thyroglobulin levels, no difference in the incidence of hypocalcemia, and no difference in the occurrence of vocal cord paralysis, between the two groups. They added that cosmetic outcome were excellent in the video-assisted group. Furthermore, the mean hospital days were lower in the endoscopic thyroidectomy group (mean 3.04 days) compare to the open technique group (mean 3.18 days)[13].

A study of 48 patients by Ujiki M, et al, compare the video-assisted thyroidectomy versus the conventional thyroidectomy, they found out that operative time is longer in the minimally invasive video-assisted thyroidectomy group (mean+_{SEM} 102+₄ minutes) over that of the conventional group (86+₃ minutes), however this is not statistically significant ($p < 0.05$). In terms of analgesic requirements there were no significant difference between the two groups ($p < 0.05$). They have also noted that there were no case of permanent hypoparathyroidism and permanent recurrent laryngeal nerve injury in both group[14].

Discussion:

Findings of this article showed that endoscopic techniques have gained a widespread acceptance among surgeons who slowly and surely equipped themselves with these techniques as part of their armamentarium, and an option to give to a selected group of patients. For some other reasons, patients today are more knowledgeable and they are

always on a hunt for best options, best surgical care and best outcome in terms of cosmesis and absence of any morbidity.

It has been shown on the results, that majority, if not all of the patients who underwent video-assisted thyroidectomy have less frequency of post-operative pain than in the open surgery group. In addition, length of hospital stay is significantly shorter in the MIVAT group than in the open surgery group.

However, there was no significant difference in post-operative complications between the two groups. Furthermore, the operative time was significantly longer for the MIVAT group than the open surgery group.

Patients satisfaction of cosmetic outcome was significantly higher in the MIVAT group than that of the open surgery group.

Conclusion:

MIVAT can be performed safely and effectively as open thyroidectomy and can be the treatment of choice in a selected group of patients.

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