Surgical Approaches to the Submandibular Gland: A Review of Literature

D. David Beahm, MD; Laura L. Pelaez, MS; Daniel W. Nuss, MD, FACS1; Barry Schaitkin, MD, FACS2; Jayc C. Sedlmayer, PhD3; Rohan R. Walvekar, MD1

1Department of Otolaryngology Head Neck Surgery, LSU Health Sciences Center, New Orleans, LA
2Department of Otolaryngology Head Neck Surgery, University of Pittsburgh, Pittsburgh, PA
3Department of Cell Biology and Anatomy, LSU Health Sciences Center, New Orleans, LA

Abstract

Objectives: Surgical excision of the submandibular gland is commonly indicated in patients with neoplasms, and non-neoplastic conditions such as chronic sialadenitis, sialolithiasis, sialorrhea, and sialodochitis. Traditional submandibular gland surgery involves a direct trans-cervical approach. In the recent past, alternative approaches to submandibular gland excision have been described in efforts to offer minimally invasive options or better cosmetic results. The purpose of this study is to present an overview of alternative surgical approaches to submandibular gland excision with emphasis on the most recent endoscopic and robotic-assisted modalities.

Study Design: Cadaveric dissection with fresh human outdoor heads followed by a review of the literature.

Methods: Cadaveric heads were dissected via both the trans-cervical and transoral approaches to the submandibular gland with the use of endoscopic assistance when indicated. Key landmarks and anatomic relationships were recorded via photo-documentation. A review of the literature was conducted using a Medline search for approaches to submandibular gland excision, including indications, results, and complications.

Results: While the traditional submandibular gland excision remains a direct trans-cervical approach, many other approaches have been described that include open, endoscopic, and robot-assisted resections. The most common endoscopic approaches involve the use of CO2 insufflation, 4 mm Hg, to create a sub-platysmal plane of dissection.

Conclusions: Alternative approaches to the SMG are feasible but should be tailored to the individual patient based on careful selection of the approach based on individual patient characteristics and needs, skill and experience of the surgeon. Reports that have used carbon dioxide insufflation for the purpose of endoscopic neck surgery. These developments will certainly define the approaches to the submandibular gland in the future.

Introduction

Surgical incisions to access to head neck lesions have rapidly evolved from traditional incisions along natural skin creases or aesthetic units to more commonly accepted incisions in the local region or from remote locations that permit comprehensive surgery. These access incisions are often smaller and complemented by endoscopy, robotic instrumentation, and laparoscopic techniques that allow the surgeon to achieve and maintain an excellent operative exposure and view. The impetus to move to more minimally invasive techniques has been that these procedures are associated with better cosmesis, less scarring, diminished blood loss, shorter hospital stay, and lower morbidity.

In the recent past, there have been several articles discussing novel approaches to excise the submandibular gland. Surgical excision of the submandibular gland is commonly indicated in patients with neoplasms, chronic sialadenitis, sialolithiasis, and to manage chronic sialorrhoea (sialorrhea) not responsive to conservative treatment. While the classic submandibular gland excision has received the most attention, several other approaches have been recently described that can be classified as ‘open’ or ‘endoscopic’ approaches (see Table 1). The purpose of this article is to review the surgical approaches to the submandibular gland in order to compare and contrast each technique while highlighting the advantages and disadvantages of individual procedures.

Methods and Materials

A review of the literature was conducted using a Medline search for approaches, indications, results, and complications of submandibular gland excision. Relevant papers were further illustrated through cadaveric dissection and photo documentation. A synopsis of the various surgical approaches to the submandibular gland is provided. Figure 1 illustrates the postauricular, lateral transcervical, and submandibular surgical incisions used to access the SMG in frontal, lateral, and submental views.

Open Approaches

- Transoral Approach
- External Approach
  - Lateral Transcervical
  - Retroauricular
- Submental

Endoscopic Approaches

- Endoscopy Assisted
  - Transoral
  - Submental
  - Lateral Transcervical
- Endoscopy
  - Robot-assisted

Table 1. Classification of surgical approaches to the submandibular gland

Figure 1. The various incisions used for resection of the submandibular gland.

Endoscopic Approaches

- Endoscopic-assisted Transoral Approach
- Endoscopic Submental Approach

Conclusions

Newer approaches to the submandibular gland have distinct advantages in terms of cosmesis over the traditional lateral transcervical approach. Although most approaches are feasible and have been successfully performed in humans, they are not widely practiced or accepted as standard of care in most academic institutions and also in community settings. In cases where submandibular gland resection is deemed necessary, we recommend careful selection of the approach based on individual patient characteristics and needs, skill and experience of the surgeon, familiarity with endoscopic technique, and availability of necessary instrumentation.

References