

Surgical Management of Parapharyngeal Abscess

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ABSTRACT

Parapharyngeal abscess is a life-threatening infection. It occurs due to spread of infection from anatomical locations in the vicinity of the space. Management of the deep neck infection is governed by the general condition of the patient, the extent of disease and patency of airway. In treatment of deep neck infections intensive antibiotic therapy and surgical drainage are complementary to each other.

Keywords: Parapharyngeal abscess, Antibiotic therapy, Intraoral drainage, External drainage, Image guided aspiration.

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INTRODUCTION

Parapharyngeal abscess is a life-threatening infection. It occurs due to spread of infection from anatomical locations in the vicinity of the space.¹ Parapharyngeal abscesses are most commonly caused by spreading infection from acute tonsillitis. Odontogenic infections and foreign bodies are also implicated etiological agents. With the advent of potent antibiotics for upper respiratory infection, the incidence of deep neck space abscesses is on the decline. However, cases of deep neck abscess due to reduced immunity, debility, human immunodeficiency virus (HIV) infection, and inadequate treatment are on the rise.

Appearance of fever (64%) and malaise are the first symptoms. Progression of infection leads to odynophagia (55%), dysphagia, ptialism. Decreased oral intake leads to secondary dehydration. Physical examination reveals neck stiffness (65%), oropharyngeal wall displacement (55%), tender lymphadenopathy (36%). Lateral cervical swelling (55%) indicates large volume pus in PPS.² Delay in treatment can lead to development of complications, which include spontaneous rupture of the abscess, jugular vein thrombosis, Lemierre's syndrome, tracheobronchial aspiration, stridor due to laryngeal edema or mediastinitis.³⁻⁵

The aim of this paper is to discuss different surgical approaches to the parapharyngeal space.

Management of the deep neck infection is governed by the general condition of the patient, the extent of disease and patency of airway (Fig. 1).

Imaging

Computed tomographic (CT) scan is the radiologic test of choice. It provides details of the size, location of the abscess

and position relative to the large vessels. Relationship of abscess cavity with the other spaces of the neck, particularly the retropharyngeal is very well-delineated on CT scan (spread to retropharyngeal space has life-threatening risk of mediastinitis). Differentiation between cellulitis and small abscesses is poor with specificity of 45%. These details aid in deciding the mode of treatment.⁶

Medical Management

In treatment of deep neck infections, intensive antibiotic therapy and surgical drainage are complementary to each other. These patients need high dependency intensive care. Dehydration needs immediate correction. Ringerlactate solution (RL) is preferred to keep the balance of serum electrolytes.⁷ Aggressive intravenous antibiotics coverage is very essential. In small volume of abscess without systemic toxicity, only antibiotic therapy can be attempted. If general condition deteriorates or there is failure of regression of abscess cavity, surgical intervention is advised.⁸

For first 72 hours antibiotic therapy must be empirical because most 'pure' parapharyngeal abscesses are not easily accessible to aspiration and commensal organisms complicate the issue. The first-line intravenous antibiotic of choice is amoxicillin with clavulanic acid (150 mg/kg per day) because most of deep neck abscesses contain beta-lactamase producing organisms. Anaerobic coverage is provided with intravenous metronidazole (0.5 gm) every 6 hourly.

Management of Airway

Clinical examination is essential to look for decreased interdental gap, narrowing of oropharyngeal isthmus. So, oral intubation can be quite challenging. In case of pus pointing on oropharyngeal mucosa, direct laryngoscopy has the risk of rupture of the abscess with subsequent aspiration of abscess. In such case of awake fiberoptic intubation, this is a good option for securing the difficult airway and avoiding a tracheostomy.^{4,14}

In difficult cases, tracheostomy under local anesthesia is a safe and reliable method to stabilize the airway. Distortion of tissue planes and the tracheal deviation due to abscess cavity can make tracheostomy difficult. In case the abscess has extended to central compartment, tracheostomy is best avoided to prevent trickling of pus in to trachea through the stoma.

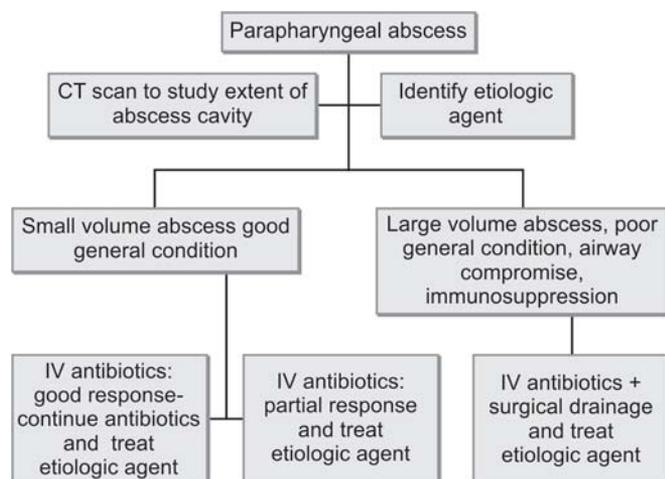


Fig. 1: Protocol for diagnosis and treatment of parapharyngeal abscesses

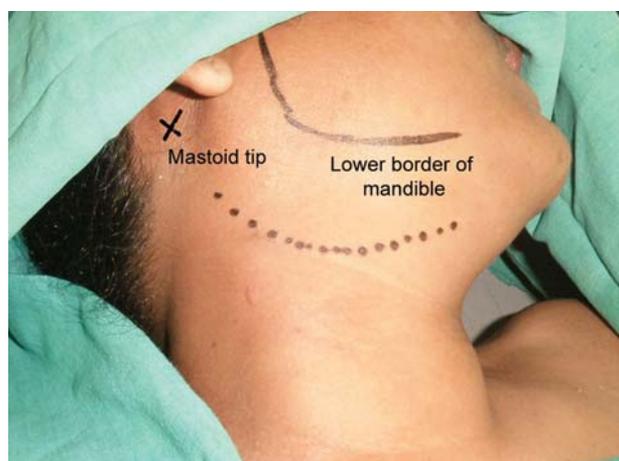


Fig. 2: The outline of modified apron incision

SURGICAL APPROACH

Levitt et al were the first to discuss different surgical approaches for drainage of deep neck abscesses. They have classified them into the intraoral and external approaches.

The external approach to the parapharyngeal space is performed through a horizontal incision in the cervical skin crease. Depending on the extent of abscess, modified apron incision and hockey stick incision are described.

1. **Modified apron incision:** Used for exposure of submandibular region and upper part of para pharyngeal space (levels I, II and III). The incision begins at submental triangle curves downward two finger breadth from the lower border of mandible toward greater horn of thyroid cartilage and extends across sternocleidomastoid (Fig. 2). The incision can be suitably modified according to extent of abscess.⁹
2. **Hockey stick incision:** Used for exposure entire PPS. Incision begins at mastoid tip and extends across posterior triangle, then curves sharply toward midline and continues along anterior border of sternocleidomastoid, ending just short of sternoclavicular joint (Fig. 3). The incision can be suitably modified according to extent of abscess.⁹

Incision is deepened through platysma. Parapharyngeal space is entered by retracting sternocleidomastoid posteriorly by blunt dissection. This step safeguards internal jugular vein and carotid vessels. Abscess cavity is entered and drained.

Pus sample is collected for culture and sensitivity. Pus is evacuated. Loculations are broken with finger dissection. Cavity is scooped gently to remove necrotic debris. Surgical site is generously irrigated. Flaps are closed over corrugated drain.

However, in contrast to classic external approach, literature search for 'intraoral approach for parapharyngeal abscess' revealed several pediatric studies in favoring

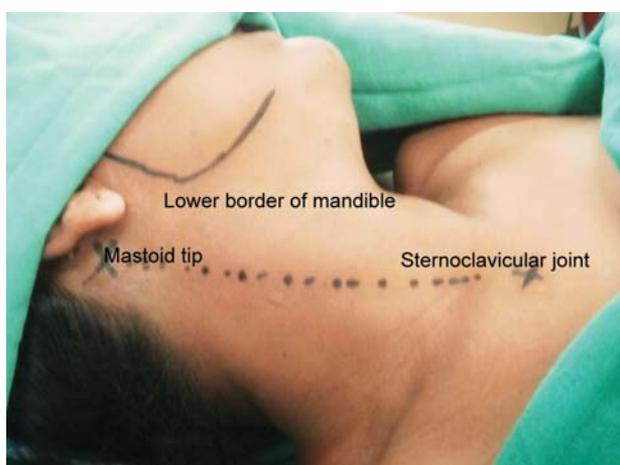


Fig. 3: The outline of 'hockey stick incision'

intraoral drainage. This fact becomes paradoxical when one is dealing with locations that are medial to the great vessels, especially in children. Intraoral drainage of parapharyngeal abscesses can be performed indistinctly by puncture drainage or incision drainage.^{1,10}

This procedure can be performed under topical anesthesia in the case of accessible abscesses and with patients who are capable of sufficient collaboration. General anesthesia and orotracheal intubation is needed in small children. Trendelenburg position is adopted to prevent possible aspiration of pus. For incision drainage, a longitudinal incision is made on the pharyngeal wall. If required intraoral surgical treatment can be repeated after 12 to 24 hours. Intraoral drainage has advantage of less morbidity, shorter hospital stay, and lower hospital costs. Despite of these advantages intraoral drainage is less aggressive approach in comparison to external drainage.

Intraoral drainage is contraindicated for abscesses that are lateral to the large vessels and complicated abscess that involve several compartments.

Surgical drainage carries its own inherent risks and potential complications. To minimize these complications image-guided aspiration has evolved. In selected cases percutaneous aspiration of abscess cavity under ultrasound or CT guidance has evolved as an alternative to conventional surgery. Ultrasound is more widely accepted due to its wide availability.

USE OF SURGICAL DRAINS

Type of drain to be used after evacuation of abscess depends on size of abscess cavity and surgeon's preference.¹¹ In extensive abscess cavity and in presence of complicating factors like diabetes mellitus (DM), abscess tends to reform after drainage. This may need re-exploration in early postoperative period. In such cases, it is preferable to use corrugated drains. In small cavity abscess without any complicating factors like DM, closed vacuum drainage can be used. This has got advantage of better cosmetic results. These conclusions are derived from small series which did not specify the type of abscesses.

Lemierre's syndrome is characterized by septicemia, internal jugular vein thrombophlebitis and septic emboli that arise secondary to acute oropharyngeal infections. Surgical drainage of abscess with in antibiotic therapy is the primary modality of treatment. Antibiotics are usually administered for 3 to 6 weeks. Metastatic emboli are known to occur. So anticoagulation is advised to prevent spread of infection and catastrophe of septic emboli at circulatory end points. Medical treatment with antibiotics and anticoagulants are continued till leukocytosis and ESR returns to baseline level.¹²

Nutritional support needs special attention. Nasogastric tube feeding is generally preferred.¹³

CONCLUSION

Management of the parapharyngeal space infection is governed by the general condition of the patient, the extent of disease and patency of airway. In case of large volume abscess cavity, external drainage is preferred for speedy recovery. However, intraoral drainage can be attempted in small volume abscess with no complicating factors like diabetes mellitus.

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