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Case Report

Hypertonic saline solution for management of parotid fistula: A case report

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ABSTRACT

The management of parotid fistulae has been unsatisfactory in the past, and numerous methods of treatment with varying success and morbidity have been described. A case of parotid fistula caused by damage to glandular elements during a transparotid approach for a subcondylar fracture reduction is reported. This paper presents a simple but effective and conservative method of treating this complication with the use of hot hypertonic saline.

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1. Introduction

A parotid fistula is an uncommon, extremely unpleasant early complication following injury in the maxillofacial region. The iatrogenic causes of parotid fistulae include mandibular osteotomy, use of external pin fixation, and as a complication of facial fracture treatment.¹ A working classification based on sialogram of PFS has been proposed by Parekh et al.² In this paper, we describe a simple but effective method of treating this complication with the use of hot hypertonic saline.

2. Case report

A 24-year-old male patient reported with right subcondylar fractures. The transparotid approach was used for open reduction and internal fixation. The transparotid approach is the most preferred choice but is extremely technique sensitive and may significantly increase postoperative complications and morbidity in untrained hands.^{4,10} The patient reported again with the chief complaint of watery discharge from a swelling on the right side of the face for the past 6 days (Fig. 1).

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Fig. 1 – Clinical view of swelling with salivary discharge from right parotid fistula.

Fig. 2 – Collection from the parotid fistula swelling.

The surgical wound continued to have a drain of a copious amount of clear, watery, and odorless fluid (Fig. 2). On sialogram, the most effective diagnostic modality³ of the defect was noticed in the parotid duct (Fig. 3).

The pressure dressing was applied for the first 4 days after the aspiration along with antisialagogues and antibiotics.

Fig. 3 – Sialography examination (sialogram).

There was no significant decrease in the size of swelling or discharge. Afterwards, we decided to use hot hypertonic saline injections. A 3% hypertonic saline was poured in a clean steel bowl and was heated to a temperature of 60 °C in an autoclave previously set at the required temperature. Five milliliter of this hypertonic solution was injected into the parotid through fistulous opening, followed by pressure dressing. This procedure was repeated for 3 days. On the fourth day, the patient did not show any signs of swelling or salivary leak as the fistula closed spontaneously (Fig. 4).

Pressure dressings and use of antisialagogues cause fibrosis of the gland in 2–3 weeks²; hence, closure of fistula in 4 days

Fig. 4 – Disappearance of the swelling and fistula 10 days after hypertonic saline therapy.

Table 1 – Management of parotid sialoceles and fistulae.

1. Diversion of parotid secretion into the mouth
 - A. Reconstructive methods
 - Delayed primary repair of duct
 - Reconstruction of duct with vein graft
 - Mucosal flaps
 - Suture of proximal duct to buccal mucosa
 - B. Formation of a controlled internal fistula
 - T-tube or catheter drainage into the mouth
 - Drainage of proximal duct by a catheter
 - C. Parotidectomy
 - D. Local therapy to the fistula
 - Excision
 - Cauterization
2. Depression of parotid secretion
 - A. Surgical approaches
 - Duct ligation
 - Sectioning of the auricotemporal or Jacobson's nerve
 - B. Conservative approaches
 - Administering nothing orally to the patient until the fistula closes
 - Drugs: atropine or Pro-banthine
 - Radiotherapy
 - Repeated aspiration and pressure

A classification of reported methods in the literature by Parekh et al.²

was attributed to warm hypertonic saline injections. Follow-up was done for 5 months with no morbidity seen.

3. Discussion

The management of parotid fistulae has been unsatisfactory in the past, and numerous methods of treatment with varying success and morbidity have been described. Conservative approaches include attempts to depress secretion by antisialagogues or radiotherapy (Table 1).²

Fibrin glue has also been used recently⁸; however, it is said that fibrin glue is rendered inactive by saliva leading to recurrence of fistula.

Tympanic neurectomy appears to be a satisfactory method of dealing with selected parotid duct fistulas, and glandular fistulas are best treated by tympanic neurectomy. Suppression of parasympathetic activity by the use of tympanic neurectomy has been said on some occasions to be transient.⁵

Pressure dressings lead to atrophy of the gland, as the lobules of the gland are contained in relatively inelastic capsule. The sustained rise in ductal pressure leads to compression of capillaries and veins, resulting in decrease in secretion and atrophy of gland.²

Absence of reflex stimulation from mastication and chemical stimuli minimizes parotid secretions and allows healing of injured duct, but this method requires maximum patient compliance for prolonged time. Anticholinergic drugs are unlikely to be useful if used alone and are associated with numerous side effects like urinary retention, xerostomia, nausea, vomiting, and vision disturbances, etc.²

Botulinum toxin A^{6,7} has been used nowadays but it has a latency period and requires repeated injections for desired

effects and the effects may not last long enough to bring about complete remission of disease.

Hypertonic saline has been used in sclerotherapy in various concentrations. The temperature of the saline can be raised above body temperature (60 °C) to enhance the fibrosing property of physiologic saline.⁹

4. Conclusions

A relatively logical and cheaper alternative was used to surgically intervene and correct the defect. Hot hypertonic saline can be used for the purpose of fistula closure because it is cost effective, causes no foreign body reaction or hypersensitivity reaction to the patients, is easily available, nontoxic and nonirritant to the surrounding structures. Inadvertent mishaps, such as this case, are expected, but careful assessment and management will resolve the condition effectively.

Conflicts of interest

The authors have none to declare.

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