

Purse String Suture Closure: A Useful Double-Layer Technique for Closure of an Oronasal Communication

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Abstract

Introduction Various treatment modalities are reported in the literature for the management of oronasal communication. Single-layer closure often leads to failure and persists a major concern to an operative surgeon. Therefore, double-layer closure is one of the keys to successful management of oronasal communication.

Material and Method A continuous intramucosal running purse string suture at submucosal depth was placed circumferentially around the defect margin with 3–0 round body polyglactin suture as a first layer. Pedicled palatal rotation axial flap based on greater palatine artery was used as the second layer of closure, above the first palatal submucosal layer.

Conclusion Intramucosal purse string suture technique provides adjacent local tissue for closure of oronasal communication. This technique is easy and can be used as an alternative option for double-layered closure of an oronasal communication, without donor site morbidity and minimal patient discomfort.

Keywords Oronasal communication · Purse string suture · Palatal rotation flap

Various treatment modalities are reported for management of oronasal communication in the literature from most conservative to surgical procedures such as buccal flap, palatal flap, temporo-parietal flap, tongue flap and free vascularized flaps [1]. Suture dehiscence, post-operative infection, avascular necrosis, and closure under tension remain to be major causes of recurrence. Among all complications of surgical closure, recurrence remains to be most common with rate of 25–37% with a challenging problem to surgeons [2]. Primary closure in single layer often leads to failure and persists as a major concern to the operative surgeon [1].

Purse string suture is defined as a surgical suture passed as a running stitch in and out along the edge of a circular wound in such a way that when the ends of the suture are drawn tight the wound is closed like a purse [3]. Purse string suture technique has been frequently used by surgeons in the closure of various cutaneous defects. This simple and rapid suturing technique provides partial or complete closure of cutaneous defects with satisfactory healing and cosmetic results [4]. However, application of this suturing in oral cavity defects has not been reported yet.

We have used this purse string suturing technique in a patient with linear oronasal communication of size 0.5 × 2 cm at right para-median palate due to trauma (Fig. 1). Careful subperiosteal undermining at all its peripheries up to 0.5 cm was done without breaching nasal and palatal mucosa. A continuous intramucosal running suture at submucosal depth was placed circumferentially around the defect margin with 3–0 round body polyglactin suture (Fig. 2a). These purse string suture ends were pulled taut and tied at one end. This leads to inward movement of palatal mucosa into the nasal cavity thus providing a barrier to oral cavity from nasal cavity and maintaining continuity

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Fig. 1 Linear oronasal communication measuring 2 × 0.5 cm

of nasal mucosa (Fig. 2b). Inward movement of mucosa exposes the submucosa to oral cavity and provides a favourable raw and healthy surface for receiving a second-layer closure in form of pedicled palatal rotation flap, buccal mucosa advancement flap or tongue flap. In this case, contralateral pedicled palatal rotation axial flap based on greater palatine artery was used as a second layer of closure, above the first palatal submucosal layer (Figs. 3, 4). A chlorhexidine gauze dressing was placed and sutured at palatal flap donor site.

Double-layered closure of oronasal communication is often desirable as it provides adequate coverage with added strength and vascularity with minimal recurrence rate [1]. This intramucosal purse string suture technique provides adjacent local tissue for closure of oronasal communication as an alternative option for double-layered closure without donor site morbidity and minimal patient discomfort.



Fig. 3 First-layer closure with purse string suture technique



Fig. 4 Second-layer closure with pedicled palatal rotation flap

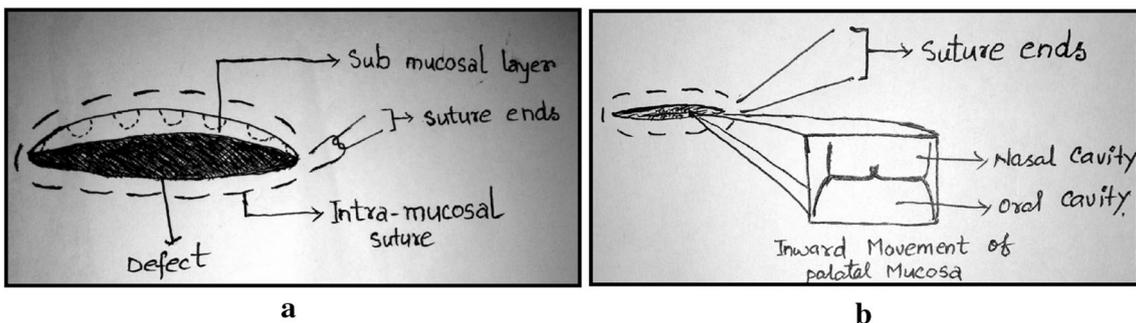


Fig. 2 **a** Illustration depicting a linear oronasal communication with intramucosal purse string suture. **b** Complete closure of defect with purse string suture end pulled taut and tied at one end and inward movement of mucosa into nasal cavity

Compliance with Ethical Standards

Human Rights Statement All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Declaration of Helsinki and its later amendments or comparable ethical standards.

Informed Consent Informed consent was obtained from all individual participants included in the study.

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