

CASE REPORT

Preventing Sino-orbital Cutaneous Fistula: A Novel Approach for Radical Maxillectomy

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ABSTRACT

The advantages of excellent exposure and minimal scarring of the classical Weber-Ferguson incision for radical maxillectomy have been timeworn. But late complication of sino-orbital cutaneous fistula following radiotherapy and delayed healing often results in less than ideal results. Most common site for this fistula is the tip near the medial canthus, which is the point where the scar bears maximum tension and results in fistula formation. Due to persistent mucopurulent drainage and poorly vascularized tissue in the irradiated area, the repair options are limited and difficult. Here, we are presenting a case report providing a novel way for better postoperative results.

Keywords: Modified Weber-Ferguson incision, Radical maxillectomy, Sino-orbital cutaneous fistula.

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INTRODUCTION

Removal of paranasal sinus tumors is a challenging exercise as far as the surgical planning and further reconstruction is concerned which may then be considered in three phases. First, one must assess the bony and soft tissue structures to be included for en-bloc resection. Second, the approach must be designed to provide adequate exposure while preserving functional tissue and cosmetic integrity whenever possible. Third, the repair should be planned to use prosthetics or soft tissue techniques to best advantage.¹ As far as radical maxillectomy is concerned the classical Weber-Ferguson incision has been routinely used since age old times and still is being used widely due to its advantage of excellent

exposure and minimal scarring as the incision follows the natural skin crease.

Sino-orbital cutaneous fistulas remain a common problem in sinonasal tumor resections and orbital exenterations. In cancer operations requiring orbital exenterations, fistulas have ranged from 5.4 to 23%.²⁻⁵ However, these defects remain a difficult to close due to persistent mucopurulent drainage and previous irradiation. Due to persistent mucopurulent drainage, infection and irradiated tissue, sino-orbital fistulas remain difficult to repair.

In our modification of radical maxillectomy incision, we split the incision and created two tips near the medial canthus. This reduces the tension on the wound, resulting in a cosmetically superior scar functionally and cosmetically. It also avoids the late complication of cutaneous fistula following radiotherapy to these areas and due to early healing of the wound, early radiotherapy can be started.

MATERIALS AND METHODS

A patient of left maxillary carcinoma, was operated at a tertiary care center with adequate diagnostic and treatment facilities for left total maxillectomy by modified Weber-Ferguson incision (Figs 1 and 2). The incision was modified near the medial canthus by splitting the incision into two peaks, creating M-shape (Fig. 3). Total maxillectomy was performed, preserving the eyeball. The incision was sutured in two layers using 3-0 Vicryl and 3-0 Ethilon. The sutures were removed on 7th postoperative day (Fig. 4). On confirmation with the histopathological

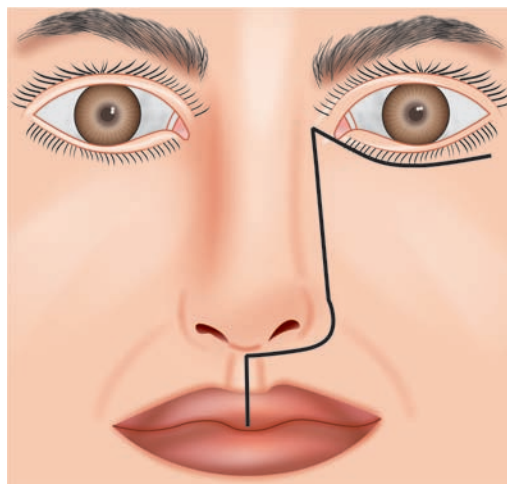


Fig. 1: Classical Weber-Ferguson incision

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examination, patient underwent radiotherapy after 4 weeks of surgery.

RESULTS

The patient was followed-up for 6 months after surgery, during which, she received radiotherapy. The wound healed completely and there was no gaping after the 6 months period.

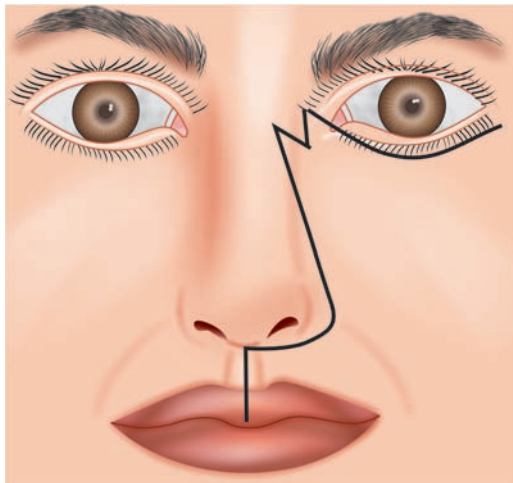


Fig. 2: Modified Weber-Ferguson incision



Fig. 3: Incision



Fig. 4: Postoperative day 7 after suture removal

DISCUSSION

Maxillary tumors are mainly treated by a combined approach of surgery and radiotherapy. A combination of these two modalities give the best results in terms of survival and of them surgery followed by irradiation is the line of treatment preferred by most.^{6,7} Surgical resection, therefore, remains the initial treatment of choice for nearly all tumors of the nasal cavity and paranasal sinuses. The surgical approach mainly entails clearance of the tumor mass with safe margins. For this purpose, the classical approach involves incision on the midface with suitable modifications as required depending on the stage of the tumor.

Many staging had been earlier devised for classifying maxillary tumors but the internationally accepted TNM classification is the most feasible of all.⁸ Surgical treatment alone is considered appropriate for nearly all benign tumors and early staged malignant tumors. Advanced malignant tumors extending to pterygopalatine and infratemporal fossa are best treated by surgical resection and postoperative radiotherapy.

Advanced unrespectable tumors are treated by simultaneous systemic chemotherapy and hyper fractionated radiotherapy. The surgical options available for maxillary tumors can be broadly categorized into:

- Inferior medial maxillectomy
- Medial maxillectomy/lateral rhinotomy
- Radical maxillectomy.

The surgical approach for maxillary sinus tumors depends on the spread and simultaneous involvement of important structures by the tumor. In all the above mentioned surgical approaches the incisions are classically given on the face along with some modifications as required:^{1,8}

- Lateral rhinotomy
- Weber-Ferguson incision
- Weber-Ferguson incision with Lynch extension
- Weber-Ferguson incision with lateral subciliary extension
- Weber-Ferguson incision with subciliary and supra-ciliary extension.

Chronic, non-healing sino-orbital cutaneous fistulas are a well-documented complication of orbital exenteration and sinonasal carcinoma resection. These fistula present with malodorous discharge, crusting, wound breakdown, difficulty with nose blowing, hypernasal speech, and inability to wear exenteration prostheses.

Due to persistent mucopurulent drainage, infection and irradiated tissue, sino-orbital fistulas remain difficult to repair. Operations for sino-orbital fistula closure vary depending on the size of the defect. Primary closure and secondary intention are usually a poor option. Authors

have described using temporoparietal fascia,⁹ orbital skin and mucosa,¹⁰ uncinata or inferior turbinate flaps,² and midline forehead flaps.¹¹

Technical Aspect of Modified Incision

In this technique, instead of a single tip near the medial canthus, the incision is split in to two, creating an M-shape. This results in the reduced tension as the pull is divided and the opposite direction of forces cancel the tension at the tip, thus providing better stability to the scar.

The above mentioned modification of classical maxillectomy approach can be easily used for all procedures of radical maxillectomy, including extensive cases where orbital exenteration is required.

CONCLUSION

The above described modification of incision for maxillectomy has many advantages over the classical Weber-Ferguson incision and it holds more significance for cancer patients where early radiotherapy is imperative for better chances of complete cure.

This modified approach reduces tension at the suture line near medial canthus, which is the most delicate part, commonest site for cutaneous fistula. Due to early healing postoperative radiotherapy can be started early and incidence of wound breakdown following radiotherapy is also less with this approach.

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