

The Role of External Surgical Approaches in the Treatment of Complications of Rhinosinusitis.

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Abstract – Objective: Whilst complications arising from rhinosinusitis are infrequent, the spread of infection orbitally or intracranially is a severe condition with high mortality. This study aims to review cases of complications arising from rhinosinusitis in the light of method of operative treatment.

Methods: 18 cases of individuals presenting to a particular clinic with the development of complications following sinusitis within the previous three years were included in the study. The characteristic features of these cases in terms of diagnosis and treatment were investigated.

Results: The mean age of all cases was 22.5 years. Both surgical and medical treatment was administered in seven cases, while medical treatment alone was used for eleven cases.

Conclusion: The benefit of this review is that there are very minor differences in outcomes between the endoscopic surgery compared to traditional external drainage to suggest that one technique is superior to the other.

Therefore, even with the evolution of endoscopic endonasal surgery, it is imperative for a sinonasal surgeon must be familiar with external approaches.

Keywords – Sinusitis, Abscess, Approach.

I. INTRODUCTION

The development of endoscopic endonasal sinus surgery has dramatically reduced the indications for external approaches. In some circumstances, the open approach is combined with endoscopic endonasal techniques to treat sinonasal pathologies and skull base lesions. Surgical procedures using external approaches for the treatment of rhinosinusitis are rarely performed and are used only in specific circumstances. These procedures are considered if the complication is not possible to be treated endonasally. These external approaches can provide the sinus surgeon with the ability to surgically remove diseased tissue that cannot be reached even by extended endoscopic approaches. When we have limitations in endoscopic visualization, transcutaneous procedures are used to increase the exposure. Open approaches to the nasal cavity and paranasal sinuses are based on the facial, scalp, and/or sublabial incisions to expose the facial skeleton. Although there is extensive literature describing endoscopic and external techniques separately, there is little literature directly comparing the safety and effectiveness of both techniques for various complications of rhinosinusitis. As a consequence, there is inadequate evidence to inform and support clinicians in deciding which technique is better for the treatment of complications of rhinosinusitis.

Generally, the complications of sinusitis are classified into three types: local (osseous), orbital, and intracranial complications. The most common complication is the orbital (60–75%), followed by the intracranial (15–20%) and the local type (5–10%). Orbital involvement is the most common complication of sinusitis (accounting for 80% of all complications) because of its close anatomical

relationship to the paranasal sinuses. If orbital complications are not treated in time, they can progress to life-threatening complications like intracranial [1],[2]. Patients in the adolescent age group get frequently affected by unwanted complications.

Based upon the anatomical sites and the degree of involvement, the patient can have various presentations in complicated sinusitis. Along with a clinical examination and extensive radiological evaluation (computed tomography and magnetic resonance imaging of the paranasal sinus and brain) is always mandated in patients with suspected complications. Conservative treatment is the first line of treatment for all complicated sinusitis. Endoscopic/open surgical drainage is indicated in progressive disease which does not respond to medical treatment. Younis[3], Souliere[4] retrospective case series suggested that subperiosteal abscesses may be managed with 48 hours of antibiotics in the absence of any deteriorating ophthalmological symptoms and signs. The surgical techniques aimed at draining subperiosteal or orbital abscesses include an external approach via skin or conjunctival incision, a transnasal endoscopic approach, or a combination of both. External drainage or a combined approach are recommended for abscesses extending laterally towards the roof or floor of the orbit[5].

The traditional approach to drainage of a medial orbital collection is via a Lynch-Howarth or Modified Lynch incision that allows an external ethmoidectomy to be performed under general anesthesia[6].

Pott's Puffy Tumor is a rare pathology due to advances in antibiotic treatment[7]. It can occur in all ages but shows a predilection for adolescents due to increased vascularization in the diploic circulation of the frontal sinus in this age, which allows a faster spread of infection. The imaging modality of choice to confirm the diagnosis is a computed tomography (CT) scan that can evidence frontal sinusitis, bone erosion, subperiosteal collection, and extradural abscess. Magnetic resonance imaging (MRI) is the gold standard to detect the presence of intracranial complications. The treatment goal of Pott's Puffy Tumor is to prevent its progression to life-threatening intracranial complications.

II. MATERIALS AND METHODS

The objective of this study was to review those cases in our clinic over the previous three years where complications had developed due to rhinosinusitis.

In this study, eighteen patients were reviewed retrospectively.

These individuals had been hospitalized between 2014 and 2017. The cases had been evaluated by routine otorhinolaryngological examination and nasal endoscopy. Radiological diagnosis and follow-up of the patients were achieved by taking 1.5mm coronal and axial sections in the axial and coronal planes to include the paranasal sinus and orbital contents.

III. RESULTS

A total of 18 patients, ten males (55.5%) and eight females (45.5%), with a mean age of 22.5, were included in the study. The diagnosis in 16 cases was orbital cellulitis and endoscopic surgery was performed in three patients, while medical treatment alone was undertaken in eleven patients. Two patients were operated with external approach via a skin incision. After treatment, no functional or aesthetic problems were encountered in the patients.

in the other two patients, surgery of the frontal sinus was performed by bicoronal incision. The front wall was restored with titanium mesh the postoperative stay was 7.2 days in patients with the endoscopic operation and 7,5 days in those with external approach

IV. DISCUSSION

The frequency of orbital complications observed in rhinosinusitis significantly decreased following endoscopic nasal examination, radiological imaging, and appropriate antibiotic therapy. Complications are frequently observed in patients who do not receive adequate treatment for acute suppurative sinusitis or who suffer acute exacerbations in chronic sinusitis[8]. Direct regional spread occurs via osteitis in compact bones and osteomyelitis in diploic bones. When the orbital tissues become infected, clinical signs appear over a broad spectrum, ranging from mild to severe[9]. In this study, patients with rhinosinusitis, who were suspected, were hospitalized. Surgical treatment was undertaken within 24 hours in cases where an orbital abscess was diagnosed. The endonasal surgical approach was applied in 3 patients with a superiorly located abscess. Kim et al [10] have reported that navigation-aided endoscopic surgery in a superiorly located orbital abscess is safe. Roithmann et al [11] report the successful application of endoscopic drainage to a patient with a superiorly located abscess. Endoscopic approaches similarly varied in terms

of the degree of lamina papyracea removed as well as whether both anterior and posterior endoscopic ethmoidectomy was done. A lack of standardization between surgical techniques made it somewhat difficult to compare these techniques based on the outcomes listed in this review. The majority of the literature base focused on retrospective analyses of single technique approaches rather than formal controlled studies between the two types of surgery. As such, many of the studies tended to sway towards reporting one surgical drainage technique over the other, thus reducing the statistical significance of any result identified. Further limitations of this review included the inability to track individual patients' clinical features and outcomes to assist in the development of recommendations for patient selection for different surgical operative interventions. The precise severity of disease and presentation could not be ascertained for many of these individual cases. As such, this makes the development of any formal guidelines difficult.

V. CONCLUSION

Imminent treatment of complicated sinusitis via medical and surgical treatment methods is vital. All drainage strategies have acceptable outcomes in relation to recurrence rates, total hospitalization (days). As such, this review supports the idea that surgeons should choose the appropriate surgical technique based on what would be the safest option for the patient.

The benefit of this review is that there are very minor differences in outcomes between the endoscopic surgery compared to traditional external drainage to suggest that one technique is superior to the other.

Therefore, even with the evolution of endoscopic endonasal surgery, it is imperative for a sinonasal surgeon to be familiar with external approaches.

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