**Introduction**

The orbit is an important compartment containing very delicate structures essential for vision. Surgical approaches to orbital lesions should provide a good exposure to allow preservation of important anatomical structures and their functions. Several approaches have been proposed for the exposure of this lesion.\(^1\)\(^-\)\(^4\) The development of modern radiodiagnostic techniques has made it easier to determine the exact location and extent of the infraorbital lesion and its relationship with the neighboring anatomical structures.\(^5\) Besides these radiodiagnostic advances and developments in microsurgical techniques, surgical approaches have become less invasive.

Kronlein\(^6\) in 1889 was the first person to describe the lateral approach for orbital lesion. This was later modified by Berke\(^7\) in 1953 which was further modified in 1976 by Maroon and Kennerdell.\(^8\) The lateral approach has been found ideal for tumors located in the lateral, superior, or inferior compartment in the orbit.\(^9\) This has also been used for orbital decompression in patients with Grave’s opthalmopathy.\(^10\)

Here we present our surgical experience by lateral orbital approach for an intraorbital lesion.

**Case Report**

A 52-year-old female presented with 1-year history of increasing right eye proptosis associated with decreased visual acuity [Figure 1]. MRI demonstrated a large enhancing mass occupying the superolateral portion of the orbit [Figure 2a, b]. A surgical approach through a lateral orbitotomy was planned. Differential diagnosis of an epidermoid tumor or a glomus tumor was made.

**Procedure**

Under general anesthesia, S-shaped skin incision was used and curved up to the brow and then posteriorly along the lateral wall. After skin incision, the frontal and zygomatic process of the zygomatic bone and frontal bone were exposed respectively. Laterally the periosteum was elevated up to the temporal bone.
to expose the lateral orbital wall. The periorbita was dissected from the inner surface of the lateral wall of the orbit. Using micromotor and tungsten carbide bur the planned cuts were marked; a superior cut was made along the frontozygomatic suture line and going posteriorly and an inferior cut made 2 cm below the first cut corresponding to the inferior orbital fissure. Two holed titanium plates were adapted in position in the superior and inferior planned cuts [Figure 3] and then the screws were removed keeping the plate in position on the osteotomized bone. The third cut was made in the lateral wall as far posteriorly approaching from the temporal fossa. After the bone removal was completed, the periorbita was opened and intraorbital dissection was done using a surgical microscope. The tumor was exposed [Figure 4] and removed in toto [Figure 5] and was sent for histopathological examination. After the tumor resection was completed, hemostasis was established and the periorbita was reapproximated. The osteotomized bone [Figure 6a] was now replaced in the prepositioned area [Figure 6b]. The subcutaneous tissue and skin were closed with vicryl and prolene respectively [Figure 7].

Histopathology [Figure 8] showed proliferation of round cells arranged in nests in a fibrous connective tissue stroma exhibiting an organoid pattern. Some of the tumor cells showed granular eosinophilic cytoplasm suggestive of oncocytic changes. Intracytoplasmic inclusions were observed in few cells. Numerous capillaries of varying size were seen interspersed between the tumor cell and the case was diagnosed as glomus tumor.

Discussion

Several approaches to the intraorbital space have been described in the literature. Selection of a proper approach to intraorbital lesions depends on various factors including the location of the tumor, the size of the lesion, and the probable pathology anticipated. Modern diagnostic methods including computed tomography, angiography, and magnetic resonance imaging have been used to define the location and size of the lesion.
Krönelein first described the lateral orbitotomy in 1889,[6] which became the preferred approach in the precomputed tomography era for resecting orbital lesions. The transcranial[13] approach was the preferred choice by most of the neurosurgeons in the precomputed tomographic era. This was mainly done for transcranial decompression to prevent visual loss by orbital edema which can usually occur after surgery.[14,15]

Though the transcranial approach provides a good surgical exposure for superiorly placed lesions because of its invasive nature lateral approach has become the preferred choice.[14,15] Except for tumors extending into the optic canal the lateral approach can be the safest method for removing orbital tumors. The lateral approach is contraindicated for tumors in the optic canal or that extends into the superior orbital fissure.[1,4]

The extent of bone removal was very minimal and we did not face any difficulty in visualizing or removing the lesion. We preserved the lateral orbital rim contrary to Arai et al.[5] and had no difficulty in removing the lesion. Wirschafter et al.[10] advocated the preservation of lateral rim in lateral orbitotomy.

Visual loss is one of the most common and most serious complications described in the literature. This may be due to traction or pressure of the optic nerve that can also result in sacrificing its vascular supply.[9] In our patient, no visual impairment was observed. Traumatic injury to the lateral muscle can also result in temporary or permanent lateral gaze palsy. Care should be taken to preserve the anatomical structures during dissection to avoid the complications. Enopthalmos was not seen in our case. Skin incisions were designed in a way to provide a cosmetic result, and care was taken to avoid damages to the frontal branch of the facial nerve.

**Conclusion**

In summary, even large orbital tumors located in the lateral or superior compartment can be resected without any morbidity using this minimally invasive lateral approach with good cosmetic results.
Kumar, et al.: Lateral orbital approach

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