Abstract

The endoscopic endonasal approach has been widely used, especially in the reconstruction of the anterior, middle, clival and parasellar cranial base after the expanded endonasal approach. However, reconstruction from above and below are sometimes mandatory to prevent complications such as CSF leakage and pneumocephalus. We report our study on 20 patients who underwent surgery to repair skull base defects. Multilayer technique was used endonasally from below using fat, several layers of fascia lata and nasoseptal flap. From above the reconstruction was done using titanium mesh or bone graft and was covered by pericranial flap.

Methods and Materials

We present our experience in managing sinonasal tumor invading the cranial cavity or brain tumor extending towards the paranasal sinuses. Cranio-endoscopic or totally endoscopic resections in these types of lesions were performed. This was followed by skull base reconstruction endoscopically or via a combined approach to prevent postoperative morbidity.

Results

We performed our technique on 20 patients:

- 11 cases of Esthesioneuroblastoma
- 4 cases of intestinal type of adenocarcinoma
- 3 cases of olfactory groove meningioma
- 2 cases of adenoid cystic carcinoma

The repair was done purely endoscopically in 8 patients while the cranio-endoscopic approach was utilized in 12 patients. Multilayer repair was used in all the cases. Cranially, titanium mesh or bone graft (served as a hard buttress) and pericranial flap were used. Endonasally, fat flaps, two to three layers of fascia lata were used and supported by nasoseptal flap if feasible. The result of our cases series showed 90% success rate with post operative re-do surgeries in only 2 cases to control CSF leak.

Case 1: A 75 years old male patient with Esthesioneuroblastoma. Cranio-endoscopic resection was done followed by multilayer repair using titanium mesh cranially and nasoseptal flap endonasally.

Case 2: A 45 years old male patient with Esthesioneuroblastoma. Cranio-endoscopic resection was also done in this case too but the repair involved calvarial bone graft from above and fat/fascia lata from below.

Conclusions

- Defects of the cranial base following endonasal brain surgery can be successfully repaired using multi-layered repair of inlay and onlay fascial grafts, fat grafts, vascularized flaps and supportive packing. Cranial repair can be done with titanium mesh or calvarial bone graft and covered by pericranial flap.
- The reconstruction of skull base defects is in constant evolution as new technologies emerge and new biomaterials are introduced.
- Reconstructive endoscopic techniques of the skull base in the absence of randomized clinical trials are often a reflection of our recent successful experience.

References


Contact

- **Name:** Dr. Abd El Rahman El Tahan
- **Affiliation:** Aswan University Hospital
- **Email:** eltahan@web.de
- **Cellphone number:** +2010000225678