

Endoscopic transnasal drainage for orbital implantation cyst after orbital wall reconstruction

Ende Wu, Jiaying Sun, Guangming Zhou, Wencan Wu

An implantation cyst after orbital wall reconstruction may present as a late complication, which can cause local pain, proptosis, diplopia, and vision impairment. Previous surgical strategies prefer transconjunctival or subtarsal approach for cyst drainage, a similar approach to orbital wall reconstruction. These strategies may have risk of secondary infection. Herein, we propose an endoscopic transnasal surgical approach, through which the removal of implant and cyst drainage can be performed conveniently. The residual, medial single-layer cyst wall is generally strong enough to support the orbital soft tissues without the need for a new implant. We believe this surgical approach can simplify the procedure, reduce the complications, and prevent cyst recurrence.

Key words: Endoscopic, implant, orbital implantation cyst, surgery, transnasal approach

Access this article online

Website:

www.ijo.in

DOI:

10.4103/ijo.IJO_3460_20

Quick Response Code:

An orbital cyst may form late after implantation of alloplastic implants during orbital wall reconstruction surgery because of the ingrowth of conjunctival epithelium or respiratory epithelium.^[1] These orbital retention cysts may cause local pain, proptosis, diplopia, and even vision loss.^[2] Trying to avoid the subsequent formation of orbit cyst, the surgeon should perceive conjunctival or respiratory epithelium and then get rid of all of them during orbital wall surgery. However, the difference between the epitheliums is hardly detectable. So, a late formation of an orbital cyst is a possible and unpredictable process.

Previous studies have reported different types of alloplastic material-associated cysts, and most of them emphasized the pathologic findings of the orbit cysts.^[1-3] However, a suitable surgical approach has not been widely discussed. The direct idea is to accomplish the surgery via the same approach of previous orbital reconstruction surgery, as transconjunctival^[4,5] or subtarsal approach.^[3] But those approaches, with the opportunity to bring new conjunctival epithelium into the surgical area, may leave a dead cavity with some residual cyst tissue for the recurrence of the cyst.^[6] Hence, the present technical note is to show a simple endoscopic transnasal approach for the drainage of epithelial cyst, removal of the implant with minimizing the risk for recurrence.

Surgical Technique

Two patients, who experienced orbital wall reconstruction surgery about 5 years ago, were diagnosed as orbital implant cyst recently and treated by endoscopic transnasal cyst drainage and implant removal surgery. Both patients underwent orbital high-resolution computed tomography (HRCT) examination, best-corrected visual acuity examination, Hertel's exophthalmometry, and extraocular movement examination. Exophthalmometry was performed by a single ophthalmologist who was masked to pre- and postoperative state. The surgical procedures were carried out by one surgeon. Both patients were followed up for 10 months after the surgery.

The procedure was carried out under general anesthesia. Nasal vasoconstriction and decongestion were achieved using epinephrine-saturated cottonoid pledgets (1:10,000 epinephrine). The cyst, shown as a bulge, was seen temporally to the middle turbinate, where ethmoidal sinus locates normally [Fig. 1a]. The nasal thin wall of the cyst was cut out by XPS3000 (Medtronic Inc., Jacksonville, FL, USA) using a 4.0-mm zero-degree endoscope (Karl Storz, Tuttlingen, Germany). Some seropurulent exudate was noted in Fig. 1b. The implant appeared after removal of the nasal wall of the cyst. Since it was immersed in mucus, it was not strongly

The Mini-Invasive Orbital & Oculoplastic Surgery Center, The Eye Hospital, School of Ophthalmology and Optometry, Wenzhou Medical University, Wenzhou, China

Correspondence to: Dr. Wencan Wu, School of Optometry and Ophthalmology and Eye Hospital, Wenzhou Medical University, 270 Xueyuan Road, Wenzhou - 325 027, Zhejiang, China. E-mail: wuwencan118submit@163.com

Received: 24-Nov-2020

Revision: 29-Dec-2020

Accepted: 25-Feb-2021

Published: 18-Jun-2021

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

For reprints contact: WKHLRPMedknow_reprints@wolterskluwer.com

Cite this article as: Wu E, Sun J, Zhou G, Wu W. Endoscopic transnasal drainage for orbital implantation cyst after orbital wall reconstruction. Indian J Ophthalmol 2021;69:1942-4.

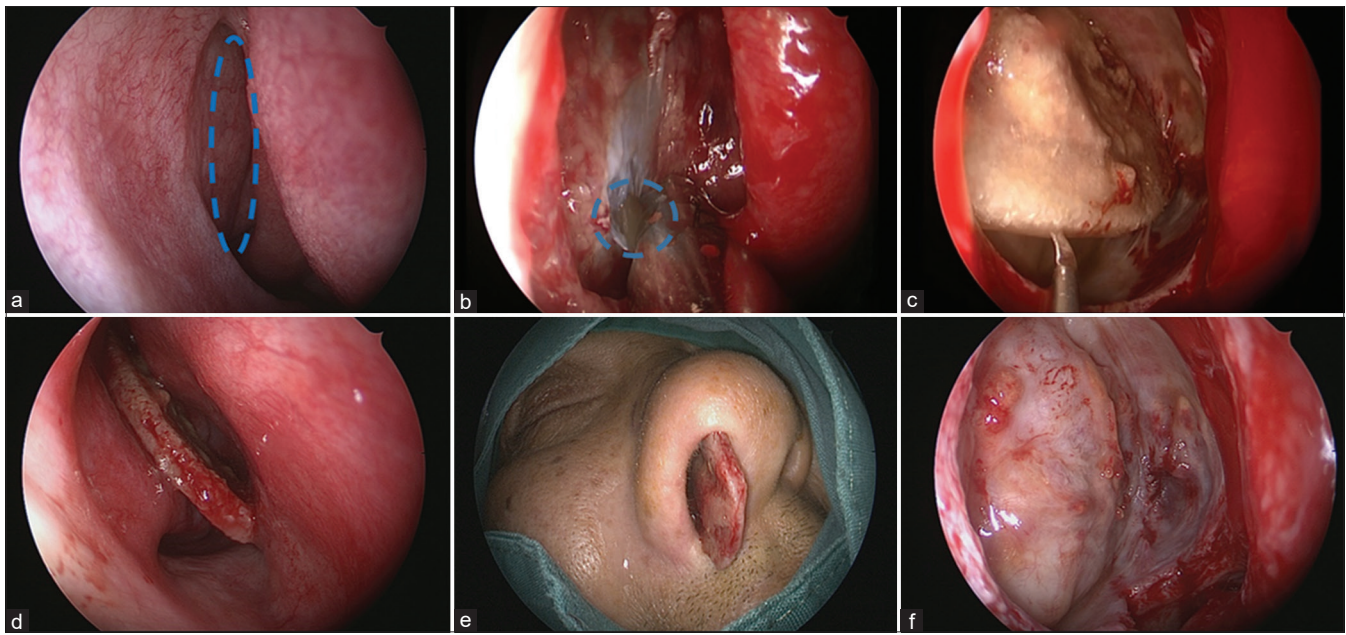


Figure 1: Surgical procedure. Blue dashed line on (a) the implantation cyst. Blue dashed line on (b) seropurulent discharge during incision of the nasal wall of the cyst

adhered to the cyst; it could be easily isolated [Fig. 1c]. The implant was pulled out with forceps via the nasal cavity and nostril without any restriction [Fig. 1d and e]. The residual temporal wall of the cyst supported the orbital tissue steadily [Fig. 1f]. The size of the implant was 30 × 18 mm. Two pieces of Merogel (Medtronic Xomed, Jacksonville, FL, USA) soaked in dexamethasone were placed to cover the exposed cyst and blood leaking mucous.

Intravenous methylprednisolone (500 mg) was given daily for 3 days, in addition to 5 days of broad-spectrum antibiotics. Reviews were carried out at 2 weeks, 1 month, 3 months, 6 months, 10 months, and then as required.

Both patients were males, in middle age, with findings of proptosis on the reconstructed side [Fig. 2c] about 5 years (case 1—5 years 0 month, case 2—5 years 9 months) after the previous surgery. The HRCT show that a cyst developed around the implant [Fig. 2a]. One has the adduction limited when the other has double vision in the primary position. The previous implants are thin porous polyethylene sheets (MEDPOR Surgical, Newnan, GA; 1.0 mm in thickness).

Results

After the surgery, the pathological findings showed mucous cyst with squamous metaplasia partly and mucous cyst with proliferation of fibrous tissue. The corrected visual was almost normal before and after the surgery. Ten months later, both patients come back for reexamination. The Hertel's exophthalmometry measuring showed a significant reduction (patient 1: from 19 to 14 mm; patient 2: from 17 to 13 mm). Both eyes were grossly symmetric [Fig. 2d]. There was not any residual eye movement problem. The HRCT showed that the medial wall of the orbit was rebuilt and the location of the eye ball was normal [Fig. 2b]. The nasal side of the new medial wall was flat and covered by nasal mucosa at 10-follow-up [Fig. 3].

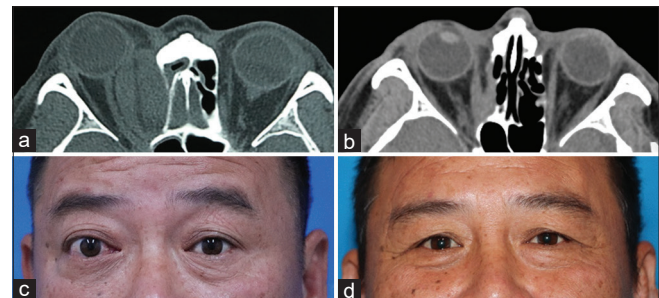


Figure 2: (a) Preoperative computed tomography (CT) image; (b) CT image at 10 months postoperatively; (c) the eyes of one patient before surgery; (d) the eyes at 10 months after surgery

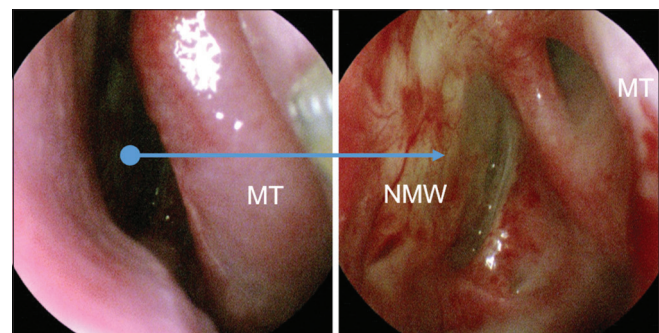


Figure 3: Endoscopic images at 10 months postoperatively. The remaining cystic wall is covered by nasal mucosa and looks flat and firm. MT: Middle turbinate; NMW: the nasal side of the new medial wall

Discussion

Here, we introduce a new surgical technique for the treatment of the orbital implantation cyst after orbital wall fraction reconstruction surgery. We found that the main complaint of

both patients, the proptosis, was resolved by this endoscopic transnasal surgery. And the secondary complaint, the double vision or eye movement limited, was relieved too.

In order to excise the cyst, surgeons prefer to choose the transconjunctival or subtarsal approach just as the same approach as the previous reconstruction surgery straight-forwardly.^[3-5,7]

To our knowledge, none have reported any transnasal approach before. One possible reason is that transnasal approach will leave the cyst open to nasal passage, which means a new implant cannot be put. In previous reports, most replaced the implant^[3,4] when one just removed the implant and left it empty because of the infection.^[7] The second possible reason is that the transnasal approach surgery will excise one wall of the cyst and leave one left wall alone to support the intra-orbital tissue. These two possible reasons may stop the surgeons from trying transnasal approach. Slentz and associates report a case of traumatic delayed orbital hematoma after orbital floor reconstruction. They evacuated the hematomas and removed the implant without replacement of a secondary implant. The scar tissue provides an adequate scaffold to support the orbital soft tissues.^[8] But in their case, they left double wall of the scarred cyst, leaving a question that if one scarred cyst wall can support the soft tissue. Our result proves that only one-layer wall of the scarred cyst without a new implant can support the orbital soft tissue.

The new transnasal approach has two obvious advantages. First, the whole procedure is like a simple endoscopic ethmoidectomy. It is convenient to achieve and only takes less than half an hour for the whole surgery. Second, the transnasal approach makes the cyst recurrence impossible. Other approaches may leave a dead space with possible residual cyst mucosa, which provides the opportunity for recurrence of the cyst.^[6,9,10] But the transnasal approach leaves the cyst open to nasal cavity. Any new excretion will discharge rather than accumulation. We believe that the surgery procedure is also suitable for cyst after the floor and medial wall reconstruction.

Conclusion

In conclusion, this technique of endoscopic orbital cyst drainage may provide an easier, promising, and safe option in cases of implantation orbital cysts.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Financial support and sponsorship

The study was supported by the National Key R&D Program of China (2016YFC1101200) and Zhejiang Provincial Natural Science Foundation of China (LQ20H120003).

Conflicts of interest

There are no conflicts of interest.

References

1. Kalantzis GK, Verity DH, Rose GE. Periocular implantation cysts: A late complication of ophthalmic surgery. *Eye* 2014;28:1004-7.
2. Su Y, Sun J, Fan X. Epithelial cysts associated with alloplastic implants after repair of orbital fractures: A systematic review and four new cases. *Br J Oral Maxillofac Surg* 2016;54:658-63.
3. Verma S, Garg A, Nastri A. Orbitomaxillary mass after repair of the orbital floor. *Brit J Oral Max Surg* 2014;52:977-9.
4. Jones DF, Wilson MW. Respiratory epithelial ingrowth and hemorrhage as late complications of orbital floor fracture repair with silicone sheet implant. *Ophthal Plast Recons* 2008;24:498-9.
5. Tan CS, Ang LP, Choo CT, Cheah ES, Chee SP. Orbital cysts lined with both stratified squamous and columnar epithelia: A late complication of silicone implants. *Ophthal Plast Recons* 2006;22:398-400.
6. Bourgault S, Bordua-Robert MF, Molgat YM. Recurrent orbital cyst as a late complication of silastic implant for orbital floor fracture repair. *Can J Ophthalmol* 2011;46:368-9.
7. Klisovic DD, Katz SE, Lubow M. The wayward implant: Orbital silicone plate extrusion associated with squamous epithelial downgrowth and infection. *Orbit* 2002;21:149-54.
8. Slentz DH, Rajjoub L, Domanski M. Atraumatic delayed orbital hematoma sixteen years after orbital floor fracture repair with porous polyethylene implant. *J Craniofac Surg* 2019;30:539-40.
9. Pauzié F, Cheynet F, Chossegras C, Aldegheri A, Carreau JP, Blanc JL. Long-term complications of silicone implants used in the repair of fractures of the orbital floor. *Rev Stomatol Chir Maxillofac* 1997;98:109-15.
10. Marks MW, Yeatts RP. Hemorrhagic cyst of the orbit as a long-term complication of prosthetic orbital floor implant. *Plast Reconstr Surg* 1994;93:856-9.