Suture knot on the repair splint: a simple method to facilitate reconstruction of the sella turcica during endonasal endoscopic transsphenoidal surgery

Technical note

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Reconstruction of the sellar floor after pituitary tumor removal is sometimes difficult because the repair graft is difficult to handle in the narrow space. This is especially problematic if the endonasal endoscopic approach is used. The authors devised a technique to facilitate this procedure by placing a suture knot on the repair splint. This allows the material to be grasped securely with forceps and improves manipulation even within the narrow nasal cavity. This technique has proved useful when performing the endonasal endoscopic approach, and it is also expected to be useful when conducting the conventional sublabial transsphenoidal approach.

Materials and Methods

We use autologous bone or cartilage for sellar floor reconstruction if a large piece can be harvested from the nasal septum or the anterior wall of the sphenoid sinus while proceeding to the sella turcica. When we follow the endonasal endoscopic approach, which does not always ensure the availability of such a bone piece, we usually use a hydroxyapatite plate (Boneceram P; Sumitomo Pharmaceutical, Osaka, Japan) for reconstruction. This plate is 1.5 mm thick and 10 × 12 mm wide and has two holes at its center. The holes have been provided so that the plate can be grasped with one forceps tip inserted into each hole.

We use the holes of the plate not for grasping but rather to facilitate tying the suture knot. We thread the holes with absorbable suture material and create a sturdy knot at the center of the plate that can be grasped with the forceps (Fig. 1 left). When using an autologous bone piece, we create two small holes on the graft and make a similar suture knot on it. If septal cartilage is being used, it can simply be pierced with a suture needle and threaded to form a knot in a similar manner.

Results

With this suture knot it becomes very easy to grasp the plate. The plate can be held firmly at the center of balance, stabilizing it at the tips of the forceps (Fig. 1 center). Because the knot is not solid or rigid, the plate can be tilted at an angle against the forceps. Held obliquely in this manner, even a relatively large plate can pass through the narrow nasal cavity without injuring the mucosa (Fig. 1 right).

After reaching the sphenoid sinus, even when the plate slips away from the forceps and rests on the bottom of the sphenoid sinus, recovery is easy if a long suture thread has been left on the knot. This redundant suture material can be cut off after the plate has been secured to the sellar floor. Fine positioning of the plate can also be accomplished by tugging on the knot after the plate has been placed in the sellar floor.

By using this method the time required for sellar reconstruction is decreased.

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Suture knot method for sellar repair

Fig. 1. **Left:** Photograph showing a commercially available hydroxyapatite plate. An absorbable suture thread is looped through the two holes and knotted. The plate can now be held securely by the knot with forceps. **Center:** Endoscopic view showing that the plate is held stable by the forceps tips and can easily be manipulated within the sphenoid sinus. Here a bone defect on the sellar floor is being covered with the plate. **Right:** Endoscopic view showing the plate tilted obliquely at the tips of the forceps and moved through the left nasal cavity between the nasal septum (S) and the middle turbinate (MT) without injuring the nasal mucosa.

Discussion and Conclusions

Although a number of materials have been described for sellar reconstruction,\(^1,5\) little attention has been paid to ways of holding or grasping the graft material. We have provided a new method of holding the splint to facilitate sellar reconstruction. This method can be applied to various graft materials.

With the increasingly widespread use of endonasal endoscopic surgery for pituitary tumor removal, specialized instruments and methods have been developed for this particular approach.\(^1,2,4\) The instruments and methods have been fashioned to adapt to a small and restricted space characteristic of this approach. Our holding technique has proved useful in this approach, and it is also expected to be useful when performing the conventional sublabial transsphenoidal approach in pituitary surgery.

References


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