Does Drug-induced Sleep Endoscopy Can Predict Success of TORS in OSA ?

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INTRODUCTION

The first Transoral Robotic Surgery (TORS) for Obstructive Sleep Apnea-Hypopnea Syndrome (OSAHS) was carried out in May 2008. After a few years, the technique was adopted with personal modifications in many ENT centers throughout the world. Since 2008 till 2014, more than 100 cases were published in 7 single center reports in Literature. In 2014, the first multicenter study about TORS in which a cohort of 243 cases from 7 groups in 5 different countries was available. Today, TORS is included in the surgical routine for sleep disordered breathing (SDB) treatment in a great number of ENT departments. Although so far just few groups have series of more than 100 TORS cases, many other groups have completed more than 50 consecutive TORS for OSAHS.

It is probably one of the most published studies in tongue base area, much more popular than the open TBRHE that inspired i.e. more than one fourth of cases. That was the motivation behind studying the findings of pre & post operative Drug-induced sleep endoscopy (DISE) in those patients to understand causes of failure and to achieve the best outcomes in patients where we had TORS surgical failures.

METHODS AND MATERIALS

Retrospective review of patients’ records of G.B. Morgagni L. Pierantoni hospital, Forli, Italy.

Preoperative DISE findings of 160 moderate to severe OSAHS cases were collected, analyzed and compared with polysomnography (PSG) results obtained after TORS.

Postoperative DISE findings were available only for 25 failed TORS cases; those findings were studied in order to identify causes of failure, sites of residual obstruction in the upper airway and, hence, to refine selection criteria for TORS with high postoperative success rate.

Finally, the relation between NOHL score (measured by DISE) and AHI (measured by PSG) was studied.

RESULTS

Preoperative DISE findings:

It was found that vertical high tongue base (Moore class A) was significantly related to failure of TORS. Moreover, when the hypopharyngeal pattern of collapse was transversal and expansion sphincter pharyngoplasty (ESP) was the performed palatal procedure, it was associated with high probability of success if compared to cases underwent to UPPP.

Postoperative DISE for failed cases:

Among 25 cases of failed TORS with available postoperative DISE, 14 patients (83.5%) had oropharyngeal collapse 75-100%; 11 of them were circular in pattern (residual palatal collapse). Moreover, 7 patients (28%) had hypopharyngeal collapse 75-100%; 6 of them were anteroposterior in pattern (residual vertical tongue body collapse).

Relationship between DISE and PSG:

The higher levels of preoperative AHI were associated with higher level of preoperative NOHL scores i.e. multiple levels of obstruction. Meanwhile, the postoperative AHI was associated with single site obstruction that was not well surgically managed.

DISCUSSION

TORS is now FDA approved for management of tongue base hypertrophy in patients with moderate to severe OSAHS.

In order to obtain the best results, patients must be properly selected for TORS using preoperative DISE.

When the patient has vertical tongue base obstruction, TORS should be avoided and maxillomandibular advancement (MMA) or hypoglossal nerve stimulation surgery might be an alternative option.

When transversal lateral hypopharyngeal collapse is seen, a lateral wall addressing palatoplasty technique should be considered to optimize TORS results as hyoid suspension is not included in the multilevel surgery with TORS.

Causes of failures as revealed by DISE:

1. Still obstructing palate due to Palate not treated at all, UPPP done in patients with transversal lateral pharyngeal wall collapse.
2. Still obstructing tongue base due to insufficient resection volume (bad exposure), superolateral residual obstruction (high wide tongue base), or macroglossy (oral tongue obstruction) which needs anterior midline robotic glossectomy.

CONCLUSIONS

• DISE data could be used for patients selection (responders vs not responders)
• DISE seems mandatory in case of TORS failure in order to analyze into detail the residual obstructions for further salvage treatments.
• DISE may contribute to collect data for improving the «traditional» TORS approach

REFERENCES