Why the Stress Over RESS?

The significance of researching revision endoscopic sinus surgery

Chronic rhinosinusitis (CRS) is an inflammatory disease of the nasal cavity and paranasal sinus mucosa. CRS has been estimated to affect nearly 15% of the global population according to an American study[1]. Diagnosis of CRS requires both subjective symptoms and objective clinical findings[2]. Patients experience at least 2 of 5 major symptoms (facial congestion, facial pain, nasal obstruction, nasal discharge, reduced sense of smell) and endoscopic or radiographic evidence of rhinosinusitis persisting for at least 12 weeks[3]. Patients are often recommended to undergo maximal medical management, which includes the use of intranasal corticosteroid sprays, oral antibiotics and saline rinses, for 12 weeks. Patients may warrant surgical intervention if symptoms are not alleviated from maximal medical treatment[4]. Functional endoscopic sinus surgery (FESS) is a minimally invasive, mucosal sparing method of surgical resection to open obstructed sinus ostia and restore sinonasal drainage and is regarded as the gold standard for sinus surgery[5]. The success rate of FESS has reportedly increased over the past twenty years due in part to newer surgical techniques and instruments[6,7]. However, FESS does fail sometimes and not all patients' symptoms are improved.

The success rate of primary FESS cases has ranged from approximately 76-97.5% over the past decade; thus, there may be approximately 2.5-24% of patients who still present with symptoms post-operation[7-9]. Several studies have suggested why FESS fails, and hypothesize that failure of primary surgery can be split into systemic and anatomic causes. The most commonly proposed reasons are residual air cells and abnormally constricted maxillary or frontal sinus ostium[7-10]. The presence of nasal polyposis has been found to be associated with a reduced success rate of FESS and has been implicated as a potential cause of failure[7]. Less prevalent causes of failure of primary FESS cases may include scarring and adhesion of the sphenoid sinus ostia, lateralization of the middle turbinate, and residual uncinate and bony partitions[9,11]. It has also been proposed that FESS fails due to improper surgical techniques and improper management or no close follow-up after surgery[12]. It is interesting to note that no significant correlation has been found between the surgeon's level of experience and complication rate; FESS is considered safe even when performed by less skilled surgeons, as long as the degree of difficulty of the surgery is adapted to their abilities[13]. Patients still presenting with CRS symptoms after primary FESS may find it necessary to undergo revision endoscopic sinus surgery (RESS).

RESS is defined as FESS performed for a second or subsequent time on patient with CRS, and it uses the similar techniques as in the original procedure[13,14]. It is estimated that between 3-20% of patients who underwent primary FESS have failed surgery and will need to undergo revision sinus surgery[10-12]. The extent and duration of disease are possible determinants of RESS, since many patients undergoing RESS have a more severe form of CRS and mucosal disease right before RESS than they did before primary surgery[10,12]. RESS is considered to be more difficult to perform since there might be missing anatomical structures, an increase in bleeding, and the presence of adhesions[7,10]. The success rate of RESS has been found to range from 50-90.9%, and the rate of further revision surgery is comparable to that after primary cases[7,11,14]. Bhattacharyya (2004) hypothesized that adequate initial surgery followed by rigorous medical management with topical steroids, decongestants, broad-spectrum antibiotics, and consistent follow up with patients might be the best way to avoid RESS[10]. More specifically, Ramadan (1999) proposed that removal of all diseased air cells and identification of the natural sinus ostium during initial surgery could possibly aid in limiting RESS[8]. It has been found that the improvement in quality of life for RESS patients is similar to primary surgery patients[9].

Having considered all the evidence that has been published, we at the St. Paul's Sinus Centre believe that it still remains to be answered as to what the absolute causes for RESS are. The many different hypotheses from previous studies provide a general indication of potential causes, but cannot be taken as definite. In fact, it is still unclear to us as to what is considered a failure of primary FESS due to varying suggestions in previous studies. Thus, we will attempt to answer these questions and generate a criteria system, which can be used to successfully identify patients who have failed primary FESS. Our study also aims to determine the prevalence of RESS at tertiary rhinology centres for patients who had primary surgery performed at a community institution as compared to patients who had primary surgery performed at a tertiary centre. Finally, we believe there are gaps in the literature regarding the effect of RESS on quality of life, thus we hope to shed some insight into this area. We hope that our study can aid in reducing the need for RESS and the chances of primary FESS failing, resulting in symptom improvement for patients.

References:

1. Van Cauwenberge P, Watelet JB: Epidemiology of chronic rhinosinusitis. Thorax. 2000, 55:S20-S21.
2. Varini, A: Ethmoid sinus surgery. Rhinology and Facial Plastic Surgery. 2009, 559-566.
3. Desrosiers M, Evans G, Keith P, Wright E, Kaplan A, Bouchard J, Ciavarella A, Doyle P, Javer A, Leith E, Mukherji A, Schellenburg R, Small P, Witterick I: Canadian clinical practice guidelines for acute and chronic rhinosinusitis. Allergy, Asthma and Clinical Immunology. 2011, 7:2.
4. Fokkens W, Lund V, Bachert C, Alobid I, Barooody F, Cohen N, Cervin A, Douglas R, Gevaert P, Georgalas C, Goossens H, Harvey R, Hellings P, Hopkins C, Jones N, Joos G, Kalogjera L, Kern B, Kowalski M, Price D, Riechelmann H, Schlosser R, Senior B, Thomas M, Toskala E, Voegels R, Wang de Y, Wormald P: EPOS 2012: European position paper on rhinosinusitis and nasal polyps 2012. A summary for otorhinolaryngologists. Rhinology. 2012, 50(1):1-12.
5. Meltzer EO, Hamilos DL: Rhinosinusitis diagnosis and management for the clinician: a synopsis of recent consensus guidelines. Mayo Clinic Proceedings. Mayo Clinic. 2011, 86:427-443.
6. Kutluhan A, Bozdemir K, Cetin H, Yalciner G, Salviz M, Sari N, Deger H, Bilgen A: Endoscopic balloon dilation sinuplasty including ethmoidal air cells in chronic rhinosinusitis. Annals of Otology, Rhinology, & Laryngology. 2009, 118(12):881-886.
7. Lee JY, Lee SW, Lee JD: Comparison of the surgical outcome between primary and revision endoscoic sinus surgery for chronic rhinosinusitis with nasal polyposis. American Journal of Otolaryngology. 2008, 29(6):379-384.
8. Ramadan HH: Surgical causes of failure in endoscopic sinus surgery. Laryngoscope. 1999, 109:27-29.
9. Litvack JR, Griest S, James KE, Smith TL: Endoscopic and quality-of-life outcomes after revision endoscopic sinus surgery. The Laryngoscope. 2007, 117:2233-2238.
10. Bhattacharyya N: Clinical outcomes after revision endoscopic sinus surgery. Archives of Otolaryngology – Head and Neck Surgery. 2004, 130:975-978.
11. Govindaraj S, Agbetoba A, Becker S: Revision sinus surgery. Oral and Maxillofacial Surgery Clinics of North America. 2012, 24(2):285-293.
12. Jiang RS, Hsu CY: Revision functional endoscopic sinus surgery. Annals of Otology, Rhinology, and Laryngology. 2002, 111:155-159.
13. Soyka MB, Holzmann D: Correlation of complications during endoscopic sinus surgery with surgeon skill level and extent of surgery. American Journal of Rhinology. 2005, 19(3):274-281.
14. Lazar RH, Younis RT, Long TE, Gross CW: Revision functional endonasal sinus surgery. Ear, Nose and Throat Journal. 1992, 71(3):131-133.