Difficult Revision Sinus Cases Made Easier By Using Image Guided Techniques.

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This is a 56-year-old man, who was referred to our ENT Sinus Care Center in Mexico City, in December 1999. His chief complaint was thick malodorous purulent anterior rhinorhea for the past 10 years, nasal congestion and posterior nasal discharge and hearing loss. He received multiple dosages of antimicrobial agents, nasal decongestants and nasal irrigations, without improvement.

Twenty years ago, he underwent two Caldwell-Luc procedures, a partial right mastoidectomy (for cholesteatoma) and two functional endoscopic sinus surgeries (FESS). The last FESS procedure was done 10 years ago. Physical examination revealed thick purulent anterior rhinorhea and fetid odor. We couldn't find during endoscopic examinations the middle and inferior turbinates. Also, he had otitis media with purulent effusion. We observed granular mucosa endonasally and mulitple synecheas; just a small remnant of the inferior turbinate was observed. Finally, we noted obstruction of maxilar, ethmoidal ostiums and tubaric dysfunction.

Sinus CT showed: Polypoid disease in the anterior and posterior ethmoids and absence of the middle turbinates and remnant of the left inferior turbinate. Revision endoscopic sinus surgery was performed, using the LandmarX™ ENT Image Guidance System, which was very helpful in several critical areas because of the extensive nature of the polypoid disease and scar tissue formation that occluded the natural ostium of the maxillary sinus and the loss of landmarks from previous surgeries.

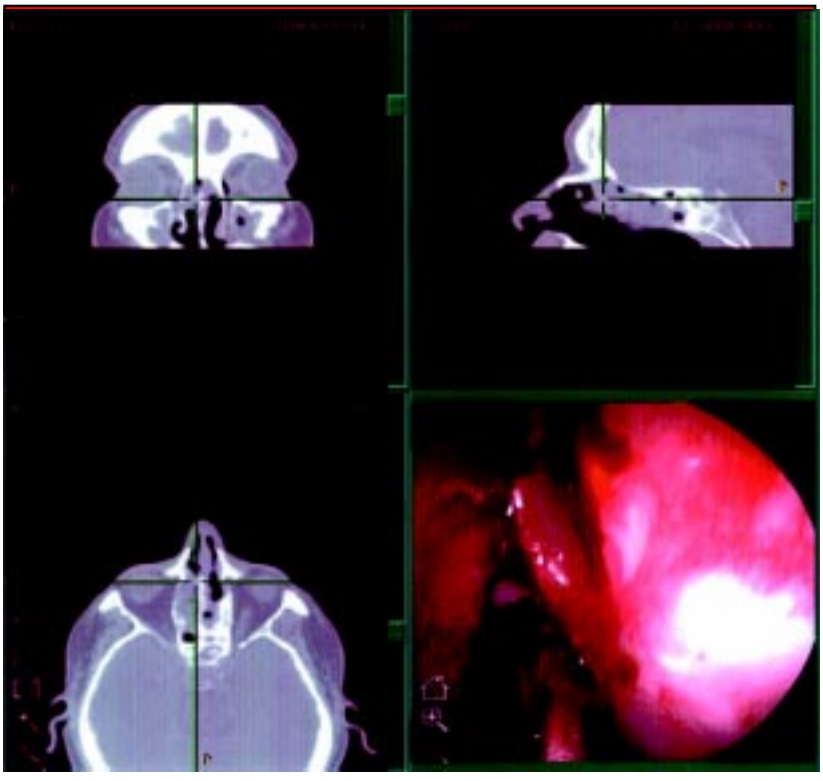

Figure 1: *The development of new technologies improving accuracy for removing disease in revision cases with localization of the anatomical structures such as the fovea ethmoidalis and other abnormal anatomical findings such as in patients with severe nasal polyposis improve patient safety.*

The posterior ethmoid cells on both sides were opened with accurate localization of the superior boundaries of the cells. **(Fig. 1)**. Left sphenoidotomy was completed with ease, using image guidance, although it was a very narrow with a small sphenoid ostium. The right sphenoid sinus ostium was found opened but with a lot of scar tissue over the mucosa blocking mucociliary flow.
All the landmarks in the nasofrontal duct **(Fig. 2)** had been previously removed and spaces in this area were filled with inspisated purulent secretions trapped into scar tissue constricting the nasofrontal duct bilaterally.

Exploration of these sinuses were accomplished with the curved LandmarX Olive-Tip Adapted Ball-Tipped Suction and the scar tissue was removed using the RAD 40® and RAD 60® angled blades attached to a micro-debrider (XPS® System, Medtronic Xomed, Jacksonville, Fla.); as well as, with frontal sinus forceps and seekers

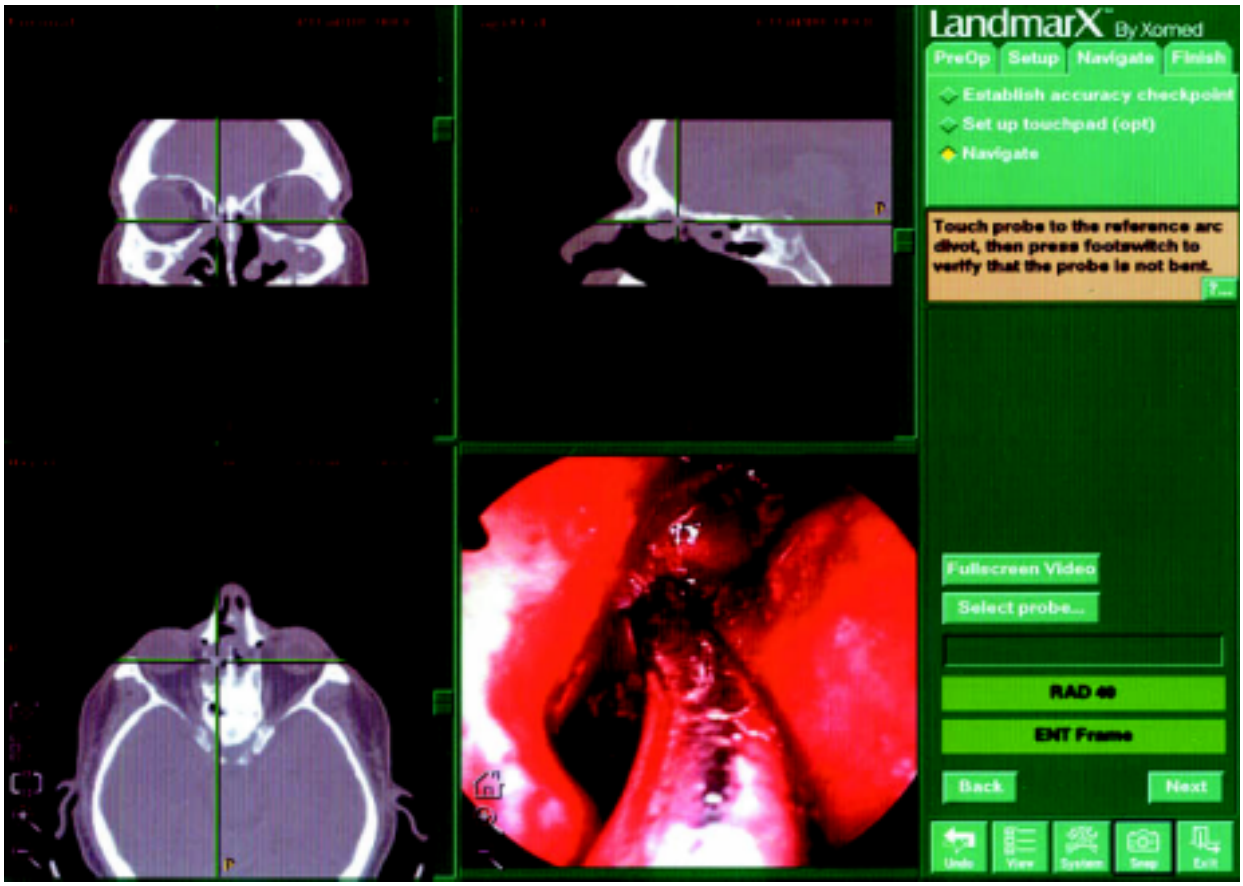

Figure 2: *The system demonstrated an accuracy to within 0.86 mm (SD 0.94mm). Head movements when repositioning the patient during the procedures did not alter intraoperative accuracy that was 1.14mm (SD 1.7mm). Yet, another advantage of this new technology lies in the possibility of using any common instrument by adapting a marker array.*

COMMENT: Revision sinus surgery can be much more difficult than primary surgery, and with image guided techniques one is able to perform more complete surgery with safety.

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