Rhinology, 29, 257-261, 1991

Medico-legal aspects in sinus surgery

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Recently, an alarming increase was observed in the number of serious complications from nasal and sinus surgery. This has had an impact on malpractice insurance rates. The pay-outs for these injuries have increased five times or more. English (1988) stressed that some of the cases could have bankrupted insurance carriers, and demanded immediate attention of all ENT doctors performing these operations.

Before any surgical training, a thorough knowledge of anatomical variations and abnormalities and of nasal pathology is highly mandatory.

Some surgical procedures may look simple and safe. Therefore, they may be too easily decided to, after a too short or insufficient conservative treatment. We should not forget that we have to treat patients and not only CT-scan abnormalities. Sometimes, the patient may be worsened by surgery due to synechiae or closure of the ostium. Many limited ethmoidectomies are not effective on the long-term if the proper diagnosis is not be made, for instance in the hypereosinophilic syndrome and aspirine triad.

It is mandatory to differentiate diseased mucosa with local implications only from diseases of the complete respiratory mucosa, where profound disturbances of the inflammatory reaction of the system is present.

Of course, today, computed tomographs in both axial and coronals cuts are mandatory before surgery not only to investigate the pathology but also to study the anatomical variations, such as:

- The roof of the anterior ethmoid in relation to the olfactory fossa, which is a place of least resistance in the skull base (Kainz and Stammberger, 1989). Bleeding from the anterior ethmoidal artery and CSP-leakage because of the specific relation of the olfactory nerve branches with the leptominges are here at risk.
- The thin medial wall of the orbit.

Paper presented at the 13th Congress of the European Rhinologic Society including the IXth I.S.I.A.N., London (United Kingdom), June 1990.

- The presence of posterior ethmoidal cells that are overriding the ipsilateral sphenoid sinus and are always in contact with the optic canal (10% of the cases) (Bansberg et al., 1987).
- The optic canal protrudes into the lateral and superolateral wall of the sphenoid sinus in 50%. Dixon noted a deep projection of the optic canal, in 7%. The carotid artery was found to bulge into the sphenoid sinus in 71 %. Kennedy et al. (1990) found an apparent dehiscence over the carotid artery in 22%. Some cases have been described were the carotid artery and/or the optic nerve was completely surrounded by the sinus cavity (Bansberg et al., 1987).

SURGICAL COMPLICATIONS

Since long endonasal ethmoidectomy was known as a difficult surgical procedure. In the early 20th century, Mosher wrote: "Ethmoidectomy is the blindest and most dangerous operation in all surgery".

Fortunately, thanks to the progress in fiberoptic headlights, operating microscopes and rigid endoscopes, complications were reduced to an acceptable rate in the hands of well-trained surgeons.

Four groups of complications may be distinguished:

1. Minor complications, that rarely provoke legal suits.
2. Major complications that can be corrected. If CSF-leak is diagnosed during the procedure it can be immediately repaired. If an orbital hematoma is diagnosed at an early stage, an emergency management (drugs perfusion, massage and orbitomy if necessary) is to be undertaken to reduce oedema and compression in the orbit. A relative orbital overpressure lasting more than 40 to 60 minutes may lead to irreversible damage (Stankiewicz, 1987).
3. Major complications that can not be corrected. Direct injury to the optic nerve provokes definitive blindness. Maniglia (1991) collected two cases of bilateral blindness, and quoted also three fatal cases of intracranial penetration with intractable haemorrhages. Damages of extrinsic ocular muscles and nerves may lead to beyond repair deficits of eye's motility.
4. Fatal complications. Injury of the cavernous portion of the carotid artery is rare but may be catastrophic. The sphenoid sinus must be packed immediately and the homolateral carotid artery is compressed in the neck. By careful monitoring and angiographic control the best treatment is then determined (Kennedy et al., 1990).

It is not our purpose to discuss all possible complications and their treatment. We would just like to underline that major complications are more likely in unexperienced hands. They generally do not occur in the series of specialized surgeons.

From a medico-legal point of view, it is very dangerous for a general ENT-

practitioner to have a complication that might have been avoided by a superspecialist. Everybody knows today, that modern surgical tools allow the surgeon to take up difficult challenges, but that is only successful when sufficiently skilled.

HAZARDSANDIATROGENY

Until now, we cannot claim that endoscopic sinus surgery eliminates all risks of major complications. On the contrary, some authors admit, with great honesty, that their "first cases" were related with an increasing rate of complications: 31 % complications with 10% major accidents among a sery of 80 consecutive patients for Stankiewicz (1987). He outlines the learning effect of these difficulties since the major complications were only 2% in the latter half of this series.
Series of major and lethal complications as they were reviewed by Maniglia et al. (1981) are unquestionable facts and extremely impressive. It is very difficult to obtain complete statistics of law-suited cases in various countries.
In France, from 1950 to 1975, among 488 cases of declarations to insurances companies, 25% (114 cases) were related to rhinologic practice. 5,3% (26 cases) occurred in sinus procedures (Appaix et al., 1976) (Table 1).

Table 1. Declarations ofrhinologic iatrogeny in France from 1950 to 1975 (Appaix et al., 1976).

minor complications	3 antral punctures	emphysema
	5 sinus procedures	bleeding
		gauze left
		asthma
major complications	5 cribiform fractures	2 meningitis
		1 pneumatocele
	12 blindness	4 Caldwell-Luc
		6 transantral ethmoidectomy
		1 endonasal ethmoidectomy
		1 Vidian nerve
lethal complications	3 sudden death after antral punctures	

While there was an important decrease of sinus surgery between 1970 and 1980, the incidence of major complications remained stable. This was caused by Vidian neurectomy which was accepted by many as a valuable treatment for nasal polyps in France. After this "Vidian period", microscopic and endoscop c endonasal surgery was rapidly expanding, but precise data are very difficult to obtain. Nevertheless, the number of major complications is not increasing, perhaps due to the fact that many teaching courses were organized. Since 1980, we collected three lethal cases by meningeal injury and infection, and five cases with blindness during Vidian neurectomies and endonasal ethmoidectomies.

MEDICO-LEGAL IMPLICATIONS

Even the most experienced surgeon is not exempted from legal pursuits. Therefore, as a precaution, the following is recommanded:

- Conventional technics are acceptable if mastered by the surgeon. However, from a legal point of view, it seems difficult to justify a naked-eyes operating surgeon before the law-court.
- Endoscopic or microscopic surgery has become mandatory.
- Keeping a good chart for each patient with CT-scans in axial and coronal cuts, not only to diagnose pathology, but also to expertise anatomical variations and anomalies.
- Provide the patient with good information, that is to say a "precise, loyal and understandable" explanation.

From the jurisdiction of the French courts it may be concluded that complications with an incidence of more than 1% have to be mentioned to the patient. In primary sinus surgery the incidence of major complications is lower, however. Only the occurrence of the CSP-leakage may be on the borderline, especially in cases recurrence or severe deformations. Besides, surgery of invading tumours represents a particular problem.

Until today a written informed consent is not required in most European countries, but changes are in view, and, if regularly applied, it will certainly influence patients as well surgeons attitudes versus too rapid surgical indications.

The surgical report is of primary importance in professional liability, and may well offer the best defence for the surgeon (Schuring, 1990). It must be dictated immediately after the procedure and should contain: the indicaton for the surgery, the surgical procedure and the expected result, the type of anaesthesia and the reasons for this choice, and the tools used (microscope, endoscope).

A copy of emergencies protocols should be available in the operating room.

The sequence of the surgical steps and all problems encountered should be described, and a postoperative schedule should be written down.

In the U.S.A., ENT and head and neck surgeons are convicted in 80% of the sues (English, 1989). In France, only 30% of the claims are suited (Appaix et al., 1976). This difference is to be explained by the different laws by which surgeons may be prosecuted. In view of the integration of Europe a comparative study will be of great interest, but the doctor's duty and Hippocratic humanism will remain the same.

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