

Prevention of complications after sinus lift surgery

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Abstract: During the study 134 patients with atrophy of the alveolar process of the upper jaw and defects of the dentition were examined before performing sinus-lifting and dental implantation. At the stage of preparation for sinus-lifting, additional endoscopic rhinoscopy and computed tomography of the upper jaw with the inclusion of the ostiomeatal complex and the paranasal sinuses were undertaken. The relationship of the initial results of clinical, tomographic and endoscopic studies with the development of complications of the intra- and postoperative period was studied. It has been established that risk factors for perforation of the mucous membrane of the maxillary sinus floor (MS) with open sinus-lifting include MS deformity in the form of bone septa, anamnestic indication of endonasal sinusotomy, functional endoscopic rhinosinus surgery, prior to sinus-lifting, after the procedure, after the sinus-lifting, the procedure is followed by a 5% lifting procedure. For the development of postoperative purulent sinusitis, the significant risk factors are the pathology of the hooked process with narrowing of the anastomosis of the MS and edema of the mucous membrane of the ostiomeatal complex, odontogenic sinusitis, and maxilloethmoiditis in the preoperative stage.

Keywords: dental implantation, sinus-lifting, complications, risk factors, maxillary sinus

At the moment, it has been established that before a sinus lift, the preparation of the patient should be carried out within the framework of close intercollegiate cooperation between the dentist and the otolaryngologist. However, the study of the conjugation of the pathology of the maxillary sinus (MS) and the complications of sinus lifting is carried out from the standpoint of a comparative analysis of frequency indicators without involving the principles of evidence-based medicine and calculating the relative risk value. This circumstance makes it difficult to objectively assess the risk of a complicated course of subantral augmentation, since the proportion depends on the total sample size and, if it is small, distorts the true picture. In connection with the foregoing, the aim of the work was to assess the incidence of maxillary sinus pathology at the preoperative stage of preparation for sinus lifting with the determination of the relative risk of postoperative complications of subantral augmentation.

The criteria for inclusion of patients in the clinical group were:

- a defect in the dentition in the distal parts of the upper jaw,
- planning of orthopedic treatment by means of dental implantation,

- insufficient volume of bone tissue of the alveolar process of the upper jaw for dental implantation,
- availability of evidence for a sinus lift
- the age of patients up to 75 years inclusive,
- informed consent of the patient to participate

The results of endoscopic rhinoscopy made it possible to establish the frequent occurrence of deviated nasal septum (33.6%), mucosal edema in the area of the osteomeatal complex (30.6%) Identified rhinitis with pathological discharge in the nasal cavity (17.9%), pathology of the turbinates (11.2%) could impede the natural drainage of the maxillary sinus through the anastomosis with the nasal cavity. According to the results of a tomographic study, the pathology of the maxillary sinus was revealed in 45.5% of cases (Table 2). At the same time, thickening of the mucous membrane of the bottom of the maxillary sinus from 3 to 5 mm occurred in 9% of cases. Darkening ("decrease in pneumatization") of the maxillary sinus was found in 14.2% of cases: of these, the pathological formation occupied up to 1/3 of the sinus volume in 7.5% of cases, from 1/3 to 1/2 of the volume - in 3.7% and more than 1/2 of the volume - in 3% of cases. A foreign body of the maxillary sinus associated with previous dental interventions was found in 4.5% of cases. In 6% of cases, defects of the maxillary sinus in the form of bony septa were identified. Bone septa during sinus lift are a risk factor for perforation of the maxillary sinus mucosa, so their detection was clinically significant. Pathology of the uncinate process occurred among patients with atrophy of the alveolar process of the upper jaw and DZR with a high frequency of 45.5%. At the same time, 22.4% patients, a tight fit of the uncinate process to the orbital wall was found. Hypertrophy and pneumatization of the uncinate process, which may impede the outflow of contents from the maxillary sinus after surgery, were detected in 14.9% of patients. A blind pocket due to attachment of the process to the orbital wall (0.7%), the presence of retraction of the uncinate process in the maxillary sinus (7.5%) also hampered postoperative drainage of the sinus. Pathology of the uncinate process, revealed by computed tomography, was combined with edema in the region of the osteomeatal complex during endoscopic rhinoscopy, which together narrowed the natural anastomosis of the nasal cavity with maxillary sinus.

After the sinus lift, the structure of intra- and postoperative complications was revealed. In 9 (6.7%) patients, when performing sinus lift, an intraoperative complication was observed in the form of perforation of the mucous membrane of the bottom of the maxillary sinus. In 3 (2.2%) patients, in the early postoperative period, hematomas were detected in the area of the mucous membrane of the transitional fold, as well as in the area of the skin on the cheek in the lower section on the side of the intervention. The case of the release of osteotropic material outside the bone was

single (0.7%). Penetration of the implant into the sinus cavity was also single (0.7%). Postoperative purulent sinusitis developed in 11.2% of cases. According to the results of the endoscopic picture in the area of the osteomeatal opening 7-8, 14-15, 21-22 and 28-29 days after the sinus lift operation, it was found that the regression of the edema of the cavity mucosa in the area of the natural anastomosis of the maxillary sinus and discharge from sinus in the clinical group was observed by 28-29 days after surgery, and hyperemia - by 21-22 days after sinus lifting.

Further, in the course of the work, risk factors for intra- and postoperative complications of sinus lifting were objectified. The presence of bone septa in the maxillary sinus is the cause-determining factor of perforation of the mucous membrane of the maxillary sinus ($\chi^2=75.4$ at $p<0.001$). Open maxillary sinusotomy is an absolute contraindication for sinus lift. However, endoscopic maxillary sinusotomy also negatively affects the development of intraoperative complication with moderate conjugation, which makes it possible to attribute this history to a relative contraindication for open sinus lifting. So, the conjugation between the indication on endoscopic maxillary sinusotomy and perforation of the bottom of the maxillary sinus mucosa was statistically significant ($\chi^2=15.5$ at $p<0.001$) with a moderate tightness of the association (contingency coefficient 0.322).

References

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