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Surgical drainage of the maxillary sinus through the inferior meatus

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SUMMARY

In the last decade an increasing number of authors advocates to avoid the Caldwell-Luc procedure whenever possible in rhinogenous and/or odotogenous maxillary sinusitis. Advantages and drawbacks of the intranasal inferior meatus fenestration and its modifications are discussed as well as some technical details. In some cases the intranasal operation could be enlarged as described by several authors many years ago. In a limited number of cases the intranasal procedures may fail to cure or improve the patients condition. Here we can still resort to a more radical type of operation via the fossa canina.

The intranasal approach to antrum via the inferior meatus was inaugurated and largely executed at the end of last and the beginning of our century (Mikulicz, 1887; Lothrop, 1897; Claoué, 1902). Progress was due mainly to a highly improved view on the limited field of operation by modern endoscopy and microsurgery. Some improvement resulted by more sophisticated instruments and last but not least by modern anaesthesiology. The Caldwell-Luc-operation came about somewhat later and seemed to offer an ideal solution to the therapeutic concept of total removal of the apparently irreversibly diseased mucosa of the antrum. The impressive therapeutic results of these so called radical operations on the maxillary antrum made the intranasal drainage through the inferior meatus seem obsolete.

In the last decade, however, observations accumulated that some of the Caldwell-Luc-operations resulted in permanent trouble for the patients due to scarry obliteration of the cavity with interspersed cystically degenerated and inflamed remnants of mucosa. Some authors felt this a biologically highly undesirable result (Legler, 1974).

With the experience of modern tympanoplasty in mind the change from radical sinus surgery to a procedure which would preserve the mucosa or part of it seemed to be justified (Wigand and co-authors, 1977). However, the judgement on the real efficacy of drainage via the inferior meatal window is still, nearly as controversial as it was in the past. There have been many adverse reports on infe-

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rior antrostomies mainly based on the excellent work of Hilding (1932), who states that this operation promotes practically no drainage through the window. Macbeth (1968) classified meatal antrostomy as one of the biggest fallacies in rhinology in so far as it does not drain anything, as it impairs the ciliary mechanism and as it enhances secondary infection. On the other hand St. Clair Thompson and Negus reported (1948) excellent results with the intranasal inferior antrostomy. They reserved the Caldwell-Luc-operation for cases, which had not been cured by the intranasal operation.

In the last few years opinions were increasingly favourable to the intranasal conservative type of operation (Dixon, Heermann, Legler, Link, Nickol, Reynolds and Brandow, Wigand and Steiner et al.). In 1978 Mann and Beck made a careful follow up study on 44 antrostomies in 32 patients over a period of 2 years. After infracturing the inferior concha they entered the antrum in the middle third of the inferior meatus, effectuated a fenestration about 5×10 mm and removed protruding polyps and cysts under transmaxillary endoscopic control. In the subjective evaluation of patients 89% of the results were positive. This corresponds fairly well to the overall picture in literature, which suggests positive results between 60 and 97%. In 73% of Mann and Beck's cases the X-ray-findings improved. Reclosure of the fenestration is reported between 2 and 50%. The closure of the fenestration did not seem to be very important. Tarkanen and co-authors (1969) stated that improvement was detectable even after closure of the opening. Some authors feel that antrostomies should be made just temporarily. Recurrency of infection was reduced in 41%, unchanged in 48% and increased in 11%. Like after the Caldwell-Luc procedure there is a theoretical chance of increased recurrent sinus infection, but this seems to depend more on individual disposition than on mediation through the open inferior meatal window.

In their report Mann and Beck gave evidence of the effectiveness of ciliary drainage through the open inferior fenestration by means of fluorescence microscopy. After the simple drainage-operation postoperative complaints are minimal and transient. When you remove mucosa on the lateral antral wall or near the pyriform crest there may follow a feeling of numbness in the teeth due to the submucosal course of sensitive nerv fibers.

The possibility of a lesion of the naso-lacrimal duct with transient or permanent stenosis must be mentioned. Heermann observed this in about 10% of his patients.

Up to now most authors felt, that the intranasal approach should not be practiced in cases of chronic odontogenous sinusitis. Recently some reports of maxillo-facial surgeons advocate contrary views. Rolffs and co-authors (1979) strongly recommend intranasal inferior fenestration for cases of oro-antral fistulas. They close the oro-antral fistula after curing or improving the sinus infection by

washing and antibiotic treatment and simultaneously effectuate the intranasal drainage through the inferior meatus.

Rehrman (1977) suggests to the Caldwell-Luc procedure whenever possible in maxillofacial surgery and to resort to intranasal fenestration.

In the experience of Mann and Beck the intranasal fenestration proved successfull even in cases of recurrent antro-choanal polyps.

In spite of this new pleading for more conservative and physiological interventions let me remark this:

The window in the lower meatus offers a limited and often not satisfactory view on the contents of the antrum, although some improvement is due to endoscopy and microsurgery.

The narrowness of the operative field in intranasal antrum surgery is admittedly a drawback. How far can we compensate it by surgical technique? The first step for most types of endonasal drainage via the inferior meatus is an infraction and upward luxation of the inferior concha. To many authors effectuating a mucosal flap seems dispensable for the simple drainage operation. For more extensive operations an inferior pedicled flap should be made. In contrast to the middle meatus drainage the inferior meatal access offers the possibility to enlarge the fenestrations an inferiorly pedicled flap should be made. In contrast to the middle meatus tissue.

In some patients with a marked lateral projection of the inferior meatus there will be only a tangent view on the cavity. In these cases one may enlarge the window towards the pyriform crest. By removing parts of it you perform the nearly forgotten Canfield-Sturmann operation. By doing this you get a definite improvement of the visibility and surgical accessibility of the antrum. In about 20 cases on which we operated in this way we found an ensuing numbness of the first two incisors and some pain. But patients would complain much less than after the Caldwell-Luc procedure. The long term results seemed satisfactory although a systematic follow-up has not been done yet.

Many modifications claiming nearly full view and avoiding the draw-backs of the Caldwell-Luc procedure have been published. (Halle, 1923; Unterberger, 1932; Eckert-Moebius, 1938).

The intranasal fenestration of the inferior meatus gives in addition the opportunity of operating simultaneously on the middle meatus. This was advocated by Rethi (1910) and Sluder (1919).

Most authors recommend a considerate and careful conchotomy on the free margin opposite the window at the end of the intervention. Hereby further control and local treatment will be made easier. In a limited number of cases the intranasal drainage will fail to cure or to improve the patients condition. Here we have to re-examine our therapeutic concept. A more radical type of operation via the canine fossa may then be indicated.

ZUSAMMENFASSUNG

Im letzten Jahrzehnt wird zunehmend empfohlen, Kieferhöhlen-Radikaloperationen nach Caldwell-Luc durch schonendere Operationen zu ersetzen. Es werden die Vorteile und Nachteile der Fensterung des unteren Nasenganges und ihre Modifikationen diskutiert und einige technische Einzelheiten dargestellt. In den seltenen Fällen, in denen die intranasale Fensterung durch den unteren Nasengang nicht zum Ziel führt, kann immer noch die sogenannte Radikaloperation nachgeholt werden.

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