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Frequent irrigation in maxillary sinusitis therapy

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SUMMARY

190 cases of maxillary sinusitis with retention of secretions were treated by frequent irrigation through an irrigation tube inserted via inferior turbinate sinus. The technique of the tube insertion through a Lichtwitz needle is described.
Repeated irrigations do not need any anaesthesia and are better approved by the patients than the usual puncture irrigation. The response seems to be at least equally good as has been observed in similar patient series by repeated puncture irrigations. The patients' requests of reinsertion of irrigation tube in cases of recurrencies gives addition support to the recommendation to accept such a therapy.

The favourable effect of irrigation in maxillary sinusitis therapy can be considered widely accepted. Further theoretical support for such a theory was gained by Engquist (1983), who demonstrated enzymes from dissolving leucocytes in the antral secretions to be partly responsible for the inflammatory mucosal damage. These observations encouraged us to make experiments with frequent irrigation in maxillary sinusitis.

As daily punctures are poorly tolerated by the patients, we used the original Knudstrup (1970) polyethylene tube to irrigate the sinus. This tube was introduced through the lateral wall of the inferior turbinate sinus for repeated irrigations without repeated punctures. We have modified the technique so that the tube can be inserted through a 2.0 mm Lichtwitz needle. The polyethylene tubing produced for venous catheterization was found to be suitable for this purpose; Catheter tubing, Cat.No. PERT-4.1; Radiopaque catheter tubing made of polyethylene; William Cook Europe ApS, Sandet 6, DK-4632 Bjaeverskov, Denmark. As this material is X-ray positive, the exact position of the tube may be easily checked. We prepare the material by splitting the end of the tubing 3–5 mm under

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an operating microscope to ensure clean cuts. In order to turn these slips in a flaring position a wire mould is inserted in the lumen and the end of the tubing is dipped into boiling water. Flaring slips are made at both ends of a 40 cm piece of the tubing for possible bilateral use on the same subject. At 70 mm from the end of the tip a sterilization resistant mark is made to facilitate the introduction. The sterilization is made in ethylene-oxide gas. This kind of tubing can be introduced through a 2.0 mm Lichtwitz needle, which is recommended for routine use. Of course, the flaring slips are pressed together when the tip passes into the needle lumen. After the withdrawal of the needle the tubing is cut into a suitable length. It should remain visible under the anterior edge of the inferior turbinate when the tip reaches the lateral mucosal wall. The subject should not be aware of the tube when it is in place. The flaring tip helps to prevent the tube from gliding out either during irrigation or otherwise accidentally. A schematic illustration of the tube in situ is given in Figure 1.

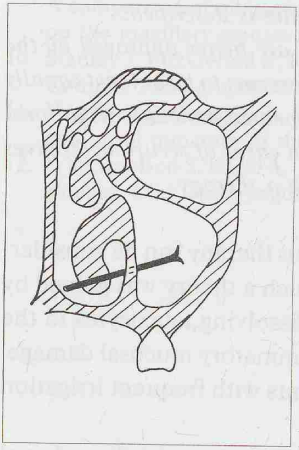

Figure 1. The irrigation tube in situ.

The irrigation is performed by drawing the tube a few millimetres, grasping the tube with anatomic forceps to allow the pushing of a gauze No 20 hypodermic needle into the tubing. The sharp edges of the hypodermic needle are polished to avoid damage of the tube. The irrigation may be repeated several times a day and no anaesthesia is needed.

CLINICAL SERIES

Our earlier trial included 57 subjects. No significant differences were found in the recovery rates when one or three daily irrigations were made during the first four to seven days of the irrigation therapy. Thus the scheme of treatment given in Table 1 was accepted and applied in the series reported below.

Table 1. Frequency of irrigations.

first week:	1–2 times daily
second week:	every second to third day
third week:	twice a week
later:	every third to seventh day

Table 2. Recovery of sinusitis by frequent irrigation therapy.

age group	duration of sinusitis (days) mean	range	cumulative recovery (number of sinuses) within one week	within two weeks	later	No. of sinuses without recovery
ACUTE PRIMARY						
≤ 6	17.5	1–30	2	2	6	–
7–15	10.2	1–35	15	25	32	–
16 ≤	11.9	1–86	12	13	15	–
		TOTAL	29	40	53	–
ACUTE RECURRENT						
≤ 6	8.0		–	1	1	–
7–15	17.9	3–64	7	14	19	8
16 ≤	21.9	2–62	8	10	18	–
		TOTAL	15	25	38	8
SUBACUTE PRIMARY						
16 ≤	21.2	2–45	1	2	5	–
SUBACUTE RECURRENT						
7–15	6.0		1	1	1	–
16 ≤	41.7	1–213	11	14	24	8
		TOTAL	12	15	25	8
OCCULT SINUSITIS						
7–15	6.9	2–13	5	9	9	2
16 ≤	16.5	2–112	9	13	18	–
		TOTAL	14	22	27	2
INTUBATION AT ETHMOIDECTOMY						
16 ≤	16.5	3–90	5	9	17	1

Table 2 depicts our series which covers a wide range of different types of maxillary sinusitis. The youngest patient was 3 years of age and the oldest 86. In addition we tried this kind of therapy in six cases which were considered to be chronic at the beginning. No recovery was achieved in these cases. In the other cases the time of recovery varied from one day up to seven months. In the latter case there has been no recurrence for more than two years now. Generally taken the recovery seems to be faster in primary sinusitis than in recurrent cases but the great variability prevents further statistical deductions.

COMPLICATIONS

In a few cases suspicion of foreign body reaction was arisen during a prolonged intubation period. In two cases the Knudstrup-tube was extracted for that reason, but any enhancement of the recovery could not be seen when weekly puncture irrigations were continued. In the other case, on demand of the patient, a new insertion was performed two weeks later and the sinus was cleared in one week. The tube was left into the sinus for further four weeks before extraction without any signs of irritation, which speaks against the foreign body reaction.
The most usual complication has been an accidental slipping out of the tube. In these cases a new insertion was performed.

DISCUSSION

In recent clinical studies the exact duration of sinusitis seldom is recorded. The recovery frequencies in the present series resemble those observed in similar series with weekly irrigations (e.g. Kortekangas, 1963, 1965) or irrigations every second day (e.g. Axelsson et al., 1975). The present frequent irrigation therapy, of course, discloses earlier the recoveries than the weekly irrigations. The main difference between repeated punctures for irrigation and irrigations through an irrigation tube is in the attitude of the subjects. Without exception those who have experienced both ways prefer the irrigation tube. In case of recurrencies the subjects very often demand a new insertion of an irrigation tube.

CONCLUSION

Theoretically, frequent irrigation using the tube is with very little additional work applicable to sinusitis therapy, when irrigation is considered necessary.
The frequent tube irrigation therapy is very well approved by the sinusitis patients. The method gives at least equally favourable response as the so far more common repeated puncture irrigation therapy.

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