

Haemostasis and chemoprophylaxis using a Specific Nasal Packing after Rhinosurgery



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AIM OF THE STUDY: *This study evaluated the effect of a new type of haemostatic – chemoprophylactic nasal packing (gel-tampon) on wound healing following the surgical removal of nasal polyps. These tampons are coated with a haemostatic hydrocolloid gel supported by a latex of microfibrils and were soaked in solution of cortisone and antimycotic or antibiotic medicament.*

MATERIAL AND METHODS: *Seventy nine patients (56 M, 23 F, age 21-81, mean age 43 years) were studied following the above procedure. The gel-tampon was soaked in a solution of cortisone plus either antibiotic or antimycotic before postoperative application. A control group consisted of patients undergoing similar surgery and given nasal packing consisting of gel-tampon without having soaked them in any of the above solutions.*

The placement of the gel-tampon was easy and well tolerated by the patients. It was sufficient for haemostasis in all cases. Pain reported during removal of the gel-tampon soaked in solution was similar than in the controls. Subsequent haemorrhage in the study groups was both less frequent than in the controls, while the inflammation rate was considerable lower in the study groups in which was used antibiotic and cortisone. Soaking the gel-tampon in antibiotic + cortisone appeared to produce a better result than the use of antimycotic + cortisone.

CONCLUSION: *In conclusion it seems that the gel-tampon soaked in cortisone and antibiotic is a good possible solution for postoperative haemostatic and anti-inflammatory care following intranasal surgery.*

KEY WORDS: Chemoprophylaxis, Haemostasis, Nasal tamponage, Nasal polyposis.

Introduction

Microendoscopic surgery of the nasal cavity and paranasal sinuses leaves unavoidable iatrogenic damage to the surrounding tissues. In most cases, as in the endoscopic intranasal removal of nasal polyps, surgical intervention is carried out in a field with a high concentration of pathogenic microorganisms because of the chronic inflammation that is commonly found. As a result, tissue damage, especially in septic areas, may often have deleterious postoperative consequences. In particular, healthy neighbouring parts of the mucosa may be affected by processes that take place in the region of the wound^{1,2}. Of course, the ultimate purpose of this surgery is the removal of neoplastic tissue formations (nasal polyps) or other pathological fin-

dings, the restoration of the physiology of the region, and secondarily the elimination of pathogenic microbial flora by means of reproductive and corrective mechanisms³⁻⁶. A necessary prerequisite is the normal healing of the wound, without pathological deviations, a stage that begins immediately after the completion of the surgical procedure. During this phase various factors exert an influence and affect the clinical course⁷. Among these are the position and extent of the surgical wound, the general and local tissue immune response and the postoperative systemic and local care.

Local postoperative care begins once surgery is completed, with the placing of appropriate nasal packing. After its removal, pharmaceutical treatment is applied locally and systemically, while an endoscopic examination and mechanical cleaning of the region are carried out on a regular basis⁷⁻⁹. Tissue deficiencies arising after the removal of the affected mucosa often expose uncovered bony surfaces, which during this interval should be covered by the regeneration of adjacent healthy tissue. Our current knowledge concerning the healing and regeneration of

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wound surfaces does not distinguish adequately between the various deviations from the normal healing mechanism, which can have undesirable results¹⁰. Research into the healing process, with a view to drawing conclusions that may illuminate many dark corners, continues with the aid of modern technology¹. A review of the literature makes it clear that there is still no standard method of postoperative systemic and local care of the surgical wound that is widely accepted and applied following intranasal surgery of the nasal cavity and paranasal sinuses^{2,11}.

This study was designed with a view to evaluating the effect on wound healing of new types of nasal packing, as well as the investigation of various other parameters (pain, ease in application of packing, haemostasis, scab formation, adhesions, oedema) that characterise the immediate postoperative period following the intranasal removal of nasal polyps. The new types of packing were the FESS type (*sponge*) and the haemostatic type (*air chamber*), which share the characteristic of being coated with a haemostatic hydrocolloid gel supported by a latex of microfibrils (*gel tamponade*).

Materials and Methods

The study population included 79 patients who underwent the microendoscopic intranasal surgical removal of nasal polyps with simultaneous cleaning and sanitation of the paranasal sinuses, which were usually also affected. The study started from June 2003 to the beginning of February 2004. Postoperative follow up ranged from 1 to 6 months. Fifty six patients were men and 23 women, with ages ranging between 21 and 81 with mean age 43 years. Surgery was performed under local anaesthesia in 61 patients and general anaesthesia in 18. Seventy two patients were operated bilaterally (72 x 2 = 144 surgical sides) and seven unilaterally. Following completion of the procedure, and according to the size of the resulting surgical surface, the nasal cavity was packed stably with FESS (®Rapid Rhino: Riemann type 3 or 4 cm, or Goodman type 5.5 cm), supported by the haemostatic type tampon when this was judged necessary for reasons of haemostasis. Before its introduction the gel-tampon was soaked for 30 sec in a solution of antibiotic + cortisone or antimycotic + cortisone. The choice of solution was a function of the study group to which the patient belonged. The antibiotic used was a third generation cephalosporin, 1 g Keftazintim in 20 ml Water for Injection. The antimycotic was 100 mg Fluconazole in 50 ml of the already prepared mother solution and the corticosteroid was 250 mg Hydrocortizone in 20 ml Water for Injection.

The patients were classified into 3 subgroups: GROUP A (n = 11). In this group the right nasal packing was always soaked in antibiotic + cortisone, while the left was always soaked in antimycotic + cortisone.

GROUP B (n = 31). In this group only antimycotic + cortisone solution was used.

GROUP C (n = 37). In this group only antibiotic + cortisone solution was used. This group included the 7 patients who were operated on only one side.

The nasal packing remained in place for 2 days in most patients and for 3 days in 15. The patients were discharged 1 day after its removal and continued under treatment for 8-10 days, taking 2nd. generation cephalosporin per os, along with local nasal application of a Vaseline ointment containing neomycin. The latter was replaced on the 8th. day by the twice daily use of a nasal bute-sonide nebuliser in combination with regular nasal lavage with normal saline. At regular intervals (every week for the first month, every month thereafter) the patients were followed up endoscopically in the outpatients' department.

The following parameters were evaluated: the resilience of the packing; its haemostatic action; the presence of early or late signs of inflammation (crusts or scabbing); and postoperative oedema. Comparisons were made between the 3 subgroups of this study and with data from a previously recorded group of patients who had undergone intranasal surgery and had been given nasal packing consisting of gel tampon soaked in water for injection. All patients included in the comparisons were receiving systemic Clintamycin and Keftazintim i.v. throughout their hospitalisation.

Statistical analysis

Statistical packet for SPSS (version 9.0) was used for statistical evaluation. Chi square test (χ^2) was used for analysis and a p-value <0.05 was considered as statistically significant.



Fig. 1: Gel tampon tamponades and antimycotic - antibiotic solutions with cortisone used in this study.

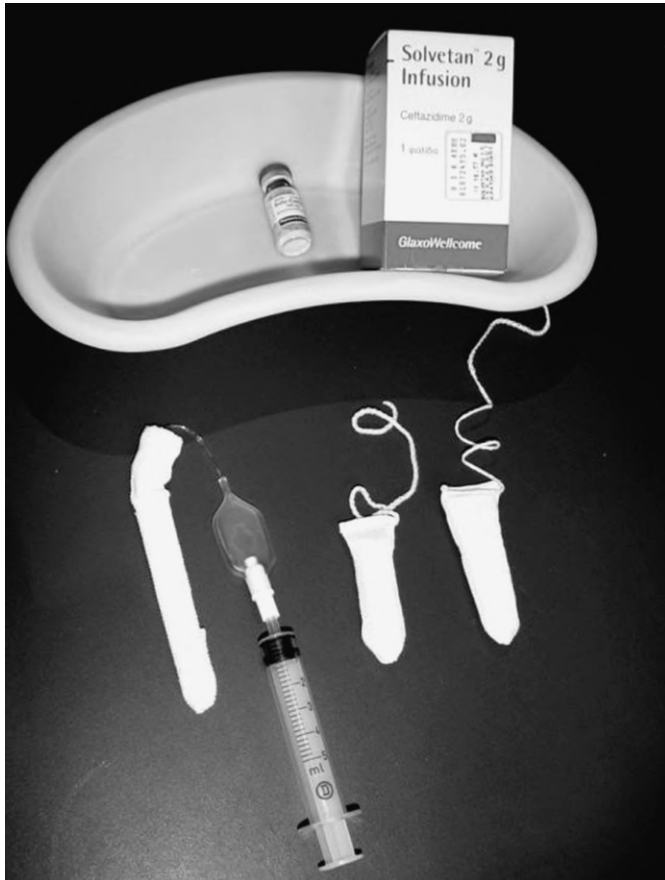


Fig. 2: After the removal of nasal polyps was soaked the nasal packing into the solution mentioned in the text for 30 sec. and place it on the surgical surf.

Results

There were not any significant differences concerning pain in the intranasal placement of the gel-tampon (of any Rapid Rhino type), in all groups even under conditions of local anaesthesia, during which was easily and well tolerated by the patient.

In no patient was early removal of the gel-tampon required because of intolerance or toxicity.

The pain, reported during tampon removal, was evaluated subjectively by the patients. As shown in Table I, the pain caused during removal of the gel-tampon of the control group was similar comparing it with the other

TABLE I – Subjective evaluation of pain level during removal of nasal packing

Pain intensity	Groups A, B, C	P	Standard deviation	Control Group
None	24 (30%)	P<0.009	0.45	9 (9%)
Negligible	31 (39%)	P>0.05	0.5	37 (37%)
Moderate	21 (27%)	P<0.006	0.47	42 (42%)
Intense	3 (4%)	P<0.02	0.49	13 (13%)

groups. The results in Group A would have been better if, during removal of the FESS gel-tampon, some microfibrils in the cover material had not caught on some non-abraded bone splinters, probably due to surgical imperfections, which thus necessitated the use of greater force before the tampon could be extracted (3 cases). After removal of the packing the occurrence of haemorrhage in the gel-tampon group was both less frequent and less severe (Table II). In this group only in 1 case (1.3%) was necessary to apply new packing for a further 3 days, while in 6 (7.6%) cases mild to moderate bleeding was stopped by light nasal packing for 1-4 hours with gauze wedges.

TABLE II – Degree of postoperative haemorrhage following removal of nasal packing

Degree of haemorrhage	Groups A, B, C	P	Standard deviation	Control group
Life-threatening	0	–	–	0
Serious	1 (1.3%)	P<0.05	>0.5	3 (3%)
Mild	6 (7.6%)	P<0.05	<0.45	12 (11.8%)
None	72 (91.1%)	P>0.05	>0.5	78 (77.2%)

The appearance of inflammatory effusion and the degree of scab or crust formation were also lower in the antibiotic + cortisone patients. In 7 (8.7%) patients of that group scabs and various other inflammatory elements necessitated long term care (2-4 weeks) under endoscopic monitoring before they were eliminated, whereas the same occurred in 13 (13%) patients of the other group (B).

The occurrence of lymphatic oedema did not appear to be related with the combination of the antibiotic or antimycotic medicaments used, nor with perioperative systemic and local treatment. Our own findings agreed with what has been well established in the literature, that the amount of postoperative lymphatic oedema was clearly dependent on the range of the intervention, mainly in the region of the maxillary sinus ostium^{2,9}.

A comparison between the 3 gel-tampon subgroups regarding immediate postoperative haemorrhage and the occurrence of local inflammation revealed that soaking the packing in antibiotic + cortisone led to a better result than the use of antimycotic + cortisone. This finding is at odds with the opinion, widely held during the last 2-3 years, concerning the relation between the development of nasal and paranasal polyps and the pathogenic effect of various mycetes on that process.

More specifically, in the first subgroup of patients, who were given packing soaked in both kinds of solution, one on each side, there was no perceptible difference between the two nasal cavities as regards the appearance of local foci of inflammation. The postoperative healing of the wound followed the same course on both sides. This was clearly due to the fact that, because of the ultimately

balanced pharmacokinetic tissue distribution (haematogenic, lymphogenic) throughout the region, equal microbiological and pharmacological conditions prevailed with the result that the healing process proceeded uniformly on both sides.

However, a comparison between the other 2 subgroups – group B, receiving packing soaked only in antimycotic + cortisone solution, and group C, with packing soaked only in antibiotic + cortisone – showed that the postoperative results regarding both haemorrhage (3 patients vs. 1) and inflammation (4 patients vs. 2) were superior in the latter group.

Discussion

It appears that the immediate postoperative application of a powerful anti-inflammatory agent (cortisone) in combination with a powerful antibiotic factor (Keftazinim), in high local concentrations, rapidly creates high tissue levels of both substances, reinforcing local anti-inflammatory and antimicrobial action. Achieving such high antibiotic levels, much higher than the Minimum Inhibitory Concentrations (MIC) of the statistically most common pathogenic microorganisms of this region, can have a decisive inhibitory effect on manifestations of inflammation, even during the haemorrhagic phase, which is beneficial for microbial dispersion. At the same time, the high tissue concentrations of cortisone exert an evident, powerful anti-inflammatory action. As a result, and in combination with the haemostatic action of the gel, it seems that this new material offers a satisfactory alternative solution for the initial postoperative haemostatic and anti-inflammatory care of the surgical wound in patients who have undergone microendoscopic intranasal surgery of the nasal or paranasal cavities. The postoperative study of the patients' surgical wound continued with the intranasal application of a tampon soaked in cortisone + antibiotic. The longer term effects are still under evaluation in patients including those of this study, in order to determine whether immediate perioperative and subsequent extensive postoperative treatment of local inflammatory factors will have an effect on the recurrence rate of nasal polyps. This appears likely, given the fact that the most widely accepted theory today concerning the genesis of nasal polyps involves the chronic inflammation of the nose and paranasal sinuses.

Riassunto

L'obiettivo di questa pubblicazione è di valutare l'influenza di un nuovo tipo di tampone nasale a doppia azione emostatica-chemioprofillattica, alla rigenerazione della mucosa nasale in seguito ad intervento chirurgico di resezione di polipi nasali. Questo nuovo tipo di tampone nasale viene avvolto da un gel emostatico a consi-

stenza idrocolloidale il quale, a sua volta, viene rinforzato e trattenuto da una matrice di microfibre, la quale, alla preparazione del detto tampone, viene immersa in una soluzione di cortisone e di un medicinale antifungino od antibiotico, a seconda delle indicazioni e delle esigenze imposte, dal tipo di paziente da trattare e dal tipo di intervento chirurgico effettuato.

79 pazienti (56 di sesso maschile, 23 di sesso femminile, età dai 21 agli 81 anni, età media 41 anni) hanno costituito il nostro campione di ricerca e sono stati trattati con il tampone descritto, seguendo tutte le procedure già descritte. Per questi pazienti, il tampone è stato immerso in una soluzione di cortisone e di un medicinale antifungino od antibiotico prima della fine dell'intervento chirurgico. Al fine di rendere più obiettivi i nostri dati, abbiamo anche costituito un gruppo di pazienti di controllo, i quali erano dei pazienti sottoposti allo stesso tipo di intervento chirurgico rispetto ai pazienti del gruppo di ricerca, ma per i quali abbiamo utilizzato un tampone non medicato.

Posizionare il tampone è stato facile e sia il tampone che l'intera procedura legata alla sua utilizzazione, si sono dimostrati ben accettati da tutti i pazienti (di entrambi i gruppi). Col tampone siamo riusciti ad ottenere il risultato emostatico desiderato in tutti i casi trattati.

Il dolore, riferito alla procedura della sua estrazione, era uguale sia nei pazienti del gruppo di ricerca che nel gruppo di controllo. L'emorragia postoperatoria era meno frequente nei pazienti del gruppo di ricerca, rispetto a quelli del gruppo di controllo, mentre era diminuita significativamente anche l'infiammazione postoperatoria per quei pazienti del gruppo di controllo per i quali abbiamo usato il tampone immerso in una soluzione di cortisone e di un medicinale antibiotico. Il tampone immerso in una soluzione di cortisone e di un medicinale antibiotico, infatti, ha dato risultato migliore, rispetto a quello immerso in una soluzione di cortisone e di un medicinale antifungino.

In conclusione, sembra che il tampone immerso in una soluzione di cortisone e di un medicinale antibiotico sia il migliore possibile trattamento, per i pazienti sottoposti ad un intervento intranasale, al fine di limitare l'infiammazione postoperatoria ed ottenere anche un'emostasi ottimale.

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Commento

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Nonostante l'originalità del metodo proposto, esso appare di limitata utilità nella pratica clinica. Anche se i risultati dimostrano una buona tolleranza nel tamponamento che ci si propone, tuttavia non appaiono più vantaggiosi rispetto alla comune pratica del tamponamento nasale moderno.

Interessante potrebbe essere un'indagine tramite ricerche microbiologiche seriate, riguardo la modificazione della flora pre- e postoperatoria. Inoltre controlli a distanza potrebbero individuare l'evoluzione, riguardo la malattia polipoide, nei confronti dei diversi trattamenti postoperatori proposti (antibiotico versus antimicotico).

Notwithstanding the originality of the paper, the proposed method seems of limited usefulness in the praxis. Also if the results demonstrate a good tolerance in the needed tamponing, nevertheless the method doesn't seem more advantageous in front of the custom modern tamponage.

It could be interesting to investigate, through microbiologic seriated researches, the pre- and postoperative modifications of the microbic flora. Moreover, controls in the follow-up could define the evolution in respect of the polypoid disease, in front of the various postoperative suggested treatments (antibiotics vs antimicrobics).

