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The value of head dressings for middle ear surgery

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Abstract

A prospective trial was performed to ascertain the value of head dressings in the post-operative management of patients undergoing middle ear and mastoid surgery. One hundred consecutive patients were randomly allocated to a head dressing or no head dressing group after wound closure.

Nine patients in the head dressing group developed a wound complication as opposed to four patients in the no head dressing group.

The application of a pressure dressing following middle ear and mastoid surgery is unnecessary and may contribute to increased wound morbidity.

Key words: Surgery, ear, middle; Occlusive dressings.

Introduction

Pressure dressings, in the form of circumferential head bandages, have long been used routinely after a wide range of middle ear and mastoid procedures. They have been employed in order to prevent haematoma formation and to provide a wound dressing.

Other surgical disciplines have found pressure dressings unhelpful in assisting local haemostasis and knowledge of optimal environments provided by different dressing materials for wound healing has improved. Gauze dressings and elastoplast may also produce adverse tissue responses so increasing rather than decreasing wound morbidity.

In light of the need for audit of standard clinical practice and examination of the quality of clinical care provided (Department of Health 1989; Devlin, 1990) we have prospectively assessed the value of head dressings following certain middle ear procedures.

Materials and methods

Ninety-eight patients undergoing one hundred, consecutive middle ear and mastoid operations were randomly allocated into a head dressing (HD) or no head dressing (no HD) group, using a closed envelope system. The envelope was drawn and allocation made after wound closure. 80 patients were from St George's Hospital and 20 from the May Day Hospital.

The procedures performed are seen in Table I. 50 patients received head dressings. Of these patients, 27 were male and ages ranged from six to 69 years (mean 35.5, SD 16.9). 50 patients did not receive a head dressing and of these 25 were male. Ages in this group ranged from three to 66 years (mean 39.2, SD 16.6). A head dressing consisted of melolin and gauze over the pinna, a further layer of cotton-wool and a circumferential four inch crepe bandage, the latter encircled with a one inch gauze strip above the lateral end of the ipsi-lateral eyebrow. This was changed for a lighter dressing 24 hours post-operatively which in turn was worn for a further 24 hours. The wound was left exposed in those patients not having this standard dressing regime.

The patients were then prospectively studied post-operatively for wound complications or morbidity attributable to any dressings applied. The patients were assessed in recovery, 24 hours post-operatively and at their first out-patient appointment, between one to three weeks later. Any emergency attendance details were also noted. A wound infection was defined in accordance with Peel and Taylor (1991) as tenderness, oedema and an extending margin of erythema. As discussed by these authors the definition was not dependent on results of bacteriological studies. We did not include fever as a pre-requisite for diagnosis as we felt a peri-aural wound infection was less likely to produce systemic disturbance than an abdominal wound infection.

All procedures were performed under hypotensive

TABLE I

Operation	Number
Myringoplasty	50
Modified radical mastoidectomy	25
Attico-antrostomy	8
Combined approach tympanoplasty	3
Cortical mastoidectomy	
& polypectomy	3
& saccus decompression	4
& T-tube insertion	1
& anterior typanotomy	1
Type 3 tympanoplasty (+ excision of tympanosclerosis)	1
Ossiculoplasty	4
TOTAL	100

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general anaesthesia and with a local infiltration of 1:200,000 adrenaline. In the no HD group 22 operations were performed by a consultant, 21 by a senior registrar and seven by a registrar. 42 were via post-aural incisions and eight via end-aural incisions. In 42 of these cases a temporalis fascia graft was harvested. In the HD group 21 operations were performed by a consultant, 18 by a senior registrar and 11 by a registrar. 46 were via a post-aural incision and four via end-aural incisions. 46 involved harvesting of a temporalis fascia graft. Wound closure was the same in each group; 37 patients had interrupted, subcutaneous and continuous, subcuticular chromic catgut or polyglactin sutures and a further 13 had interrupted skin sutures, six with polypropylene and seven with silk. The latter 13 in each group represent individual surgeon perference.

Results

Nine patients in the HD group had wound complications compared with four patients in the no HD group ($x^2=2.2$, $0.1<p<0.25$). These are listed in Table II.

Of those patients developing a wound infection three had modified radical mastoidectomies, one had an attico-antrostomy, two had cortical mastoidectomies, two had myringoplasties and one had an ossiculoplasty. Six of these operations were performed by a consultant, two by a senior registrar and one by a registrar. One of these patients also developed perichondritis and another had a concomitant discharge of hydroxyapatite crystals, used to obliterate his cavity, through his post-aural wound. Both latter two patients were in the HD group. Wound closure was with subcutaneous and subcuticular, absorbable sutures in all three patients in the no HD group and in four patients in the HD group. The two further patients in this latter group had polypropylene skin closure.

Both patients developing an haematoma had undergone myringoplasty. In each case the collection was small and did not require aspiration. Neither case developed a wound infection.

In the no HD group five patients had oozing of blood from the external auditory meatus or wound. None of these patients developed a wound complication. In the HD group two patients also had a bloody ooze from the wound noted when the head dressing was first changed at 24 hours.

Two patients in the no HD group had a prominent auricle post-operatively as opposed to three patients in the HD group. All these patients had undergone myringoplasty via a post-aural incision. None had had a wound infection.

Discussion

The purpose of any dressing must be to provide optimum conditions for wound healing. Over 60 years ago otologists were already debating the after-treatment of wounds created during mastoid surgery (Jenkins, 1926). At that time many wounds were left open with no dressing and indeed it was considered important by Heath (1926) in the discussion following presentation of the above paper, that air should circulate the operative site to prevent recurrence of sepsis. However, with the development of more sophisticated surgical eradication of middle ear disease allowing safe primary wound closure, and the use of temporalis fascia as pioneered by Heermann in 1958 (Weir, 1990) the application of often elaborate mastoid pressure dressings has become standard (Saunders and Paparella, 1971; Goycoolea *et al.*, 1989).

TABLE II

Wound complication	Group	
	HD	No HD
Infection	6	3
Bruising/Haematoma	1	1
Minor dehiscence	1	0
BIPP reaction	1	0
TOTAL	9	4

Clinical audit has prompted us to examine this surgical dogma. We have subsequently found more wound complications in patients having head dressings (18 per cent) than those not having head dressings (8 per cent) though this is not a significant difference. The commonest complication in our series is infection. Our overall rate of infection of 9 per cent is comparable with that of Dickins and Graham (1989) who had a 10 per cent incidence of infection for 111 in-patient tympanomastoid operations and an 8 per cent incidence of 196 similar out-patient operations. We had one case of perichondritis complicating a wound infection. This compares with Jackson *et al.* (1985) who had five cases out of 149 (3 per cent) for open mastoid procedures. Our case occurred in a patient who had received a head bandage.

No difference was detected, as might have been expected, in the incidence of haematoma formation between the two groups. Two patients developed this complication and both had undergone myringoplasty. In each case peri-wound bruising was visible but neither had a collection large enough to aspirate. Neither subsequently developed a wound infection. The mastoid dressing wound therefore seem unecessary for its primary intended purpose, that of applying pressure to prevent local bleeding. Interestingly, in other surgical disciplines wound pressure dressings have not been found helpful (Carpel, 1990; Johnstone *et al.*, 1991). A prospective trial to evaluate the role of head dressings in the post-operative management of the prominent ear in a plastic surgery unit also found them unnecessary, with no haematoma or extra cosmetic deficit occurring in patients not subject to bandaging (Powell, 1989). In our study the incidence of pinna prominence following surgery, was greater in the HD group.

Minor oozing of blood from the wound or meatus was noted from five patients in the no HD group therefore the only role of a padded head dressing would seem to be to absorb any trickle of blood. We do not feel a pressure dressing is necessary for this purpose and applied a melolin dressing, with a crescentic slit cut for the auricle, as needed.

If there are no obvious advantages of a head dressing, are there any disadvantages? In our study there were more infections associated with the use of head dressings than not. This may be because any subcutaneous collection of blood or mucus cannot escape as easily as in the no HD group, thereby remaining as a possible culture medium. The environment under a head dressing may also promote bacterial proliferation. *Pseudomonas aeruginosa* as well as anaerobic organisms have been found, after artificial

wound innoculation, in greater numbers under occlusive dressings than in those wounds left open to air (Marshall *et al.*, 1990). *Staphylococcus aureus* survived as well under occlusive dressings as in the air-exposed wounds. Chrintz *et al.* (1989) have found no difference in the incidence of infection in clean and clean contaminated wounds whether dressed or left exposed.

Dressing materials may also carry intrinsic risks. Allergic and irritant reactions of adhesive bandages are well recognized (Norris and Storrs, 1990). Myospherulosis has been recovered from the middle ear, nose and paranasal sinuses in cases in the United States of America. It is thought to have arisen from gauze dressings used for haemostasis (Anonymous, 1977). Tight dressings may also carry risks of local ischaemia. Pressure necrosis of the skin on the lateral surface of the pinna is recognized after the use of padded head dressings for pinnaplasty (Powell, 1989) and has been described in a bicoronal flap (Bainton and Barnard, 1989).

The traditional mastoid pressure dressing is unnecessary following middle ear surgery. It is uncomfortable for the patient, does not improve conditions for optimum wound healing, prevents early observation of the wound as in the case developing a BIPP reaction and presents needless expense in terms of dressing materials and nursing time.

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