

BACTERIOLOGICAL SWABS IN HIP SURGERY

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A prospective trial was carried out in 70 patients undergoing elective total hip replacement, in order to correlate bacterial contaminants in the wound at operation with the subsequent clinical results. A new method of collecting bacteria via a swab left in the wound for the duration of the operation proved to be as effective as the conventional swabbing technique in patients with known previous hip sepsis who, following revision surgery, showed evidence of further infection.

Key words: arthroplasty; hip; bacterial swabs; technique

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Collection of bacteriological specimens during hip surgery usually entails swabbing various sites of the wound. The number of swabs and the sites from which they are taken has not been standardised and is entirely dependent on the individual surgeon.

In an attempt to standardise this technique and possibly to provide a more reliable method of collecting specimens, it was proposed that a swab left in the most dependent part of the wound would collect organisms washed into this "sump" by blood and other fluids during the operation. The subsequent clinical course of the patient could then be correlated with the bacteriological results thus obtained.

PATIENTS AND METHODS

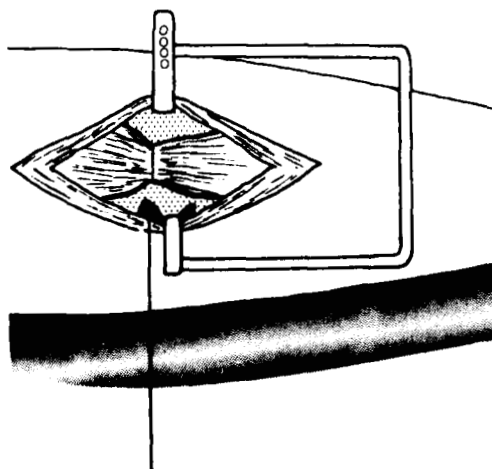
Seventy patients were included in the study. Forty-six patients underwent primary total hip replacement (the "primary group"), of which 37 patients had idiopathic osteoarthritis (80 per cent). The hip pathology in the remaining nine patients of the primary group comprised rheumatoid arthritis (4 patients) and secondary osteoarthritis (5 patients). There was no previous history of hip sepsis in the patients of the primary group.

Twenty-four patients had had previous hip surgery (the "revision group"), for failure of previous arthroplasties, osteotomies or osteosyntheses. Eight of these patients were known to have had previous hip sepsis.

All operations were carried out in the Charnley-Howarth clean air enclosure without varying the technique of the exposure. After dividing the deep fascia and inserting the self-retaining retractor, the wound appears diamond shaped. The "sump swab" used was a piece of sterile stockinette (3 × 6 cm) which was slipped over the inferior blade of the retractor and where it remained *in situ* until the deep fascia was closed (Figure 1). The swab was then incubated in cooked meat medium at 37° for 5 days. Subcultures were then plated out onto blood agar at 24 h and 5 days. These were incubated aerobically and anaerobically. In the revision group, additional swabs were taken in the conventional manner by wiping cotton wool swabs over appropriate areas, e.g. trochanteric wires, acetabulum, femoral canal, bone cement or granulation tissue. These swabs were treated in the same way as the sump swabs.

Antibiotics were not used in the primary group. They were used in the revision group if the hip was obviously infected at the time of surgery or if a swab subsequently gave a positive culture. Antibiotic loaded cement was not used in either group.

The patients were followed up for at least 1 year in the primary group and 4 years in the revision group. Radiographs of the hip were taken at each visit and haematological investigations carried out where indicated.



Stockinette swab beneath the inferior blade of the deep fascial retractor

Figure 1.

RESULTS

In the primary group there were 43 negative and three positive cultures from the sump swab. None of the patients in this group had any evidence of infection in the hip at review. Of the 24 patients in the revision group, eight were known to have had previous hip sepsis. The causative organism had been recorded in each case. The swab results and clinical outcome of the patients in the revision group are shown in Table 1. Of the eight patients with previous hip sepsis, three had re-

current infection with the same organism (coagulase-negative staphylococci) at review. The sump swabs were positive for these organisms in each of these three cases and the additional swabs in two of them. The 16 other cases in the revision group with no record of prior infection were symptom free at review. The sump swabs were negative in all these cases but organisms were isolated from the additional swabs in two cases.

DISCUSSION

As expected, there were "false positive" cultures from both types of swab, i.e. no subsequent infection of the hip was apparent at review. This can be attributed to such factors as small numbers or low virulence of the organisms, body defences and surgical technique. Of more importance was the fact that there were no "false negative" results from the sump swabs in the infected cases, whereas the additional swabs were all negative in one patient who subsequently developed recurrent hip sepsis.

The sump swab gave comparable results to multiple patch testing of the wound although the number of cases is too small for statistical conclusions. A combination of the two methods is likely to increase the chances of detecting contaminating organisms in the wound.

Table 1. Swab results and clinical outcome of patients in the secondary group

Case numbers		Swab culture		Presence of hip infection
		Sump	Additional	(at review)
Known previous hip sepsis	1	-		-
	2	+	+	+
	3	+	+	-
	4	+	-	+
	5	-	+	-
	6	-	-	-
	7	-	+	-
	8	+	+	+
No previous hip sepsis	9-24	all -	two +	all -

CONCLUSION

The sump swab is presented as a simple supplementary method for screening wound bacteria. Its merits should be further studied.

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