out accurate fracture reduction, and movement of bone within the wires can take place. In a bone as heavily stressed as the tibia this is almost impossible to avoid. In other situations, as for instance the fibular component of certain ankle fracture-dislocations, they can be of very great value.

It would be a pity for the appropriate use of encircling wiring in fracture treatment to be discredited by further repetition of this long-standing misapprehension concerning the reasons for its failure when used inappropriately.

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Epipodophyllotoxin VP 16213 in acute non-lymphoblastic leukaemia

SIR,—Professor P Jacobs and his colleagues (15 February, p 396), reporting the use of VP 16213, an epipodophyllotoxin derivative, in the treatment of acute non-lymphoblastic leukaemia expressed their interest in hearing of similar experiences.

We have recently published some of our results with this drug in treating acute leukaemia.¹ It was particularly interesting to us to find that VP 16213 seems to be active not only in acute myelomonocytic leukaemia (AMML) as previously reported,² but also in acute myelocytic leukaemia (AML). We treated seven patients with AML. All were in relapse following intensive previous treatment to which they were resistant. VP 16213 was used alone in a dosage of 150–250 mg/m² daily given as a continuous infusion for three consecutive days. Of the seven patients treated, one attained complete remission, another very probably a complete remission, and a third patient had a good partial remission.

On the basis of these results we have since used this agent in the following combination: vincristine 1 mg every 12 hours for two doses on day 1; adriamycin (doxorubicin) 60 mg/m² on day 2; 6-thioguanine 200 mg/m² daily on days 2–6; VP 16213 100 mg/m² daily as a continuous infusion on days 2–5. So far this combination has given us two complete remissions in the first four patients treated. These were all patients with AML in a first relapse after other primary treatment.

The Swiss Group for Clinical Cancer Research is now using this combination in a co-operative study for all patients relapsing after primary induction therapy with cytosine arabinoside and daunorubicin. It is still too early for even preliminary results of this co-operative trial to be reported.

On the basis of experimental data³ we are at present attempting to assess the value of VP 16213 in combination with cyclophosphamide in the treatment of acute leukaemia. This could be of interest if it leads to an improvement of the well-known COAP regimen.⁵

We also would be most interested to hear of the experience of others using similar programmes.

We thank Sandoz Ltd for supplying VP 16213.

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- 1 Cavalli, F, et al, *Schweizerische medizinische Wochenschrift*, 1975, 105, 250.
- 2 European Organisation for Research in the Treatment of Cancer, *British Medical Journal*, 1973, 3, 199.
- 3 Dombrowsky, P, and Nissen, N I, *Proceedings of the 66th Annual Meeting, American Association for Cancer Research*, 1975, p 167.
- 4 Whitecar, I P, et al, *Cancer Chemotherapy Reports*, 1972, part 1, 56, 543.

Medical aspects of North Sea oil

SIR,—I am the house surgeon at the Gilbert Bain Hospital in Shetland and read with great interest your article (6 September, p 576) summarising the findings of the working party on the medical aspects of North Sea oil.¹

I wish to point out how very stretched the hospital service is in Shetland by oil industry casualties. The hospital is staffed medically by one consultant surgeon and one pre-registration house surgeon, both of whom are on call all the time. No provision has been made for additional staff or equipment to deal with the extra burden of injuries which the hospital is required to treat.

Working on permanent duty has become intolerable and medical students are occasionally employed as locum house officers to allow the house surgeon some time off. Is it ethical that the North Sea oil industry should rely for its surgical back-up on one surgeon and a medical student, who may also be required to cross-match blood?

The limelight of the national press has recently fallen on Shetland, illuminating new and useful wealth on Britain's shores. What it does not show is the far from adequate situation which really exists here in the hospital.

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- 1 BMA Scottish Council, *Report of the Working Party on the Medical Implications of Oil Related Industry*. Edinburgh, BMA, 1975.

Sterilisation: laparoscopy or laparotomy?

SIR,—The importance of this debate is underwritten by the space that it occupies in your correspondence columns. The long-term sequelae of both operations are still not fully realised because it is only in the more rural districts that patients consistently return to the hospital where they were first treated. During 1972 and 1973 we sterilised nearly a thousand women—the majority by division and diathermy of the Fallopian tubes under laparoscopic vision. We have made a careful and controlled follow-up study¹ of some of these patients, which shows an increased incidence of menorrhagia and dysmenorrhoea in women who have been sterilised. This is most marked in those whose operation was done using laparoscopic techniques. In our study the follow-up period was short, and since its completion many more patients have developed complications which give cause for alarm. An increasing number of patients have needed hysterectomy.

There is a common clinical picture in women complaining of "poststerilisation" menorrhagia and/or dysmenorrhoea in that they usually have a mobile, normal-sized, normally positioned, but tender uterus. These patients do not respond to any conservative measures and ultimately require hysterectomy. Usually hysterectomy is done by the vaginal route, but some patients have had an

abdominal hysterectomy and others have had a diagnostic laparoscopy prior to vaginal hysterectomy. In these cases we have observed gross dilatation of the venous plexus in the infundibulopelvic ligament. It is therefore highly probable that the syndrome is due to impaired uterine circulation. Whether the symptoms are due simply to bloody congestion or to a secondary hormonal disturbance is an interesting speculation.

It is my belief that the operation of laparoscopy-division/diathermy of the Fallopian tubes should no longer be favoured, but I am less certain what operation should succeed it. Many gynaecologists will surely be reluctant to put back the clock and return to sterilisation by open laparotomy because of greater postoperative discomfort and longer hospital stay. I suspect most clinicians will agree that male sterilisation is not the answer if only because a high proportion of men refuse or are reluctant to have a vasectomy operation. The reluctant man who is persuaded is likely to fare badly.

What then is the answer? The laparoscopy?—Yes. But rather than burn the tube and its underlying blood vessels should we not apply occlusive clips? There are certainly fewer immediate postoperative complications and it is reasonable to expect fewer long-term complications. Perhaps there will be a marginally higher pregnancy failure rate, but this will lessen as the type and quality of clips are perfected. In Britain Lieberman et al² are pioneering the method and their results should be watched with interest.

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- 1 Neil, J R, et al, *Lancet*, 1975, 2, 699.
- 2 Lieberman, B A, Bostock, J F, and Anderson, M C, *Journal of Obstetrics and Gynaecology of the British Commonwealth*, 1974, 81, 12.

SIR,—Laparoscopic tubal occlusion is a relatively new technique and it is correct that it should be evaluated. I cannot, however, agree with Dr G Hughes and Mr W A Liston (13 September, p 637) that a technique which has a subsequent pregnancy rate of 2.2% in the hands of Aberdeen gynaecologists has "considerable advantages" over the more reliable laparotomy tubal ligation. Emphasis is correctly placed upon the necessity for adequate training of operators, but I remain unconvinced that lack of experience fully explains the high pregnancy rate. According to Dr Hughes and Mr Liston's own figures the pregnancy rate following laparoscopy tubal occlusion did not differ greatly whether performed by a consultant or by a junior registrar. After at least four years' experience of the procedure consultants in Aberdeen still obtained a pregnancy rate of 3.2% in 1973. One's entire career in hospital medicine involves the training of junior staff. Procedures which require such prolonged experience to achieve proficiency would seem to be inappropriate for routine use. Like Dr Hughes and Mr Liston, I too hope that an improvement can be made on the pregnancy rate following laparoscopic tubal occlusion, but I prefer to believe that this is unlikely to result from obtaining yet more experience of the same technique. I presume that, in the light of the information obtained, patients in Aberdeen who present requesting "sterilisation" will henceforth be offered a choice of operation.