registrars or inexperienced surgeons, since precision is required within narrower limits than for trifin nailing, it is certainly not true in centres where these methods are employed by surgeons willing to devote the necessary time and effort to master a slightly more difficult, but very much more efficient technical procedure. Writing in the *BMJ* as long ago as 1969 Barnes² described the trifin nail as the "least effective method in common use" and stated that it should be restricted to the undisplaced or impacted subcapital fracture.

Secondly, Mr Ring states that "no method of internal fixation, however secure, can overcome the problem of the avascular femoral head." This is not necessarily so provided good reduction is also present. Garden³ has examined the long-term results of a consecutive series of 323 healed displaced subcapital fractures and shown that, with scarcely an exception, the fate of the femoral head is directly related to the quality of reduction and its maintenance until union is present. From his findings the fact emerges that anatomically reduced fractures, whatever their initial degree of displacement, will not only unite if securely held but will also normally escape the late secondary changes usually attributed to avascular necrosis.

It is still insufficiently appreciated that these late secondary changes (now usually described as "late segmental collapse"), which appear after union and most commonly not until the second or third postoperative year, usually constitute a mild and comparatively easily manageable complication in the majority of the elderly patients affected, most of whom are able to continue to cope with life's demands and retain their activity without the need for further surgery. Of 53 patients with united displaced subcapital fractures treated by triangle pinning⁴ who survived a three-year follow-up, 21 showed some radiological evidence of collapse, but only four of these patients had sufficient disability to require secondary surgery, while in the remaining 17 symptoms were either slight or absent altogether. A similar picture of late segmental collapse emerges from the Barnes survey already mentioned.¹

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¹ Barnes, R, *et al*, *Journal of Bone and Joint Surgery*, 1976, **58B**, 2.

² Barnes, R, *British Medical Journal*, 1969, **2**, 575.

³ Garden, R S, *Journal of Bone and Joint Surgery*, 1971, **53B**, 183.

⁴ Smyth, E H J, and Shah, V M, *Injury*, 1974, **5**, 197.

SIR,—Dr G K Morris and Professor J R A Mitchell (8 January, p 108) state that in the management of hip fractures "prophylactic anticoagulation is tedious and not without complications, but it will prevent pulmonary embolism." Undoubtedly, the efficacy of oral anticoagulants in preventing pulmonary embolism is proved.^{1,2} However, it is perhaps the complications that deter 97% of orthopaedic surgeons from routine use of these drugs.³

Firstly, anticoagulant therapy carries its own mortality even in elective hip surgery in carefully screened cases.⁴ Secondly, the morbidity from postoperative wound bleeding and haematoma formation is increased^{1,2,4-6} when oral anticoagulants are used. The wound haematoma is viewed with particular dismay by the orthopaedic surgeon because of the risk of consequent "deep" sepsis involving the

metal implant.⁴ Infection of the implant is an unmitigated disaster which causes the failure of the operation and can itself produce a significant death rate. In a recent review of 85 patients undergoing operation at this hospital for femoral neck fractures there were six cases of postoperative deep sepsis and each of these patients died within three months.⁷ This series is too small to be conclusive, but then there is no information at all about infection in either of the two major publications which advocate the use of anticoagulants. Until there is there is unlikely to be any wider acceptance of a method with these potential hazards and which is also "tedious."

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¹ Seivitt, S, and Gallagher, N G, *Lancet*, 1959, **2**, 981.
² Morris, G K, and Mitchell, J R A, *Lancet*, 1976, **2**, 869.

³ Morris, G K, and Mitchell, J R A, *Lancet*, 1976, **2**, 867.

⁴ Crawford, W J, Hillman, F, and Charnley, J, Centre for Hip Surgery, Wrightington Hospital, Publications No 14, 1968.

⁵ Hamilton, H W, *et al*, *Journal of Bone and Joint Surgery*, 1970, **52B**, 268.

⁶ Salzman, E W, and Harris, W H, *Journal of Bone and Joint Surgery*, 1976, **58A**, 903.

⁷ Waddell, G, personal communication.

Chemotherapy for varicella-zoster infections

SIR,—We would like to add our experience of using adenine arabinoside (ara-A) in herpes simplex and herpes zoster infections to those commented on in your leading article (18 December, p 1466). Juel-Jensen¹ reported a good clinical response in two out of three cases with herpes zoster infections.

During the past two years we have treated seven patients with this drug administered by intravenous infusion in a dose of 10 mg/kg/day over a five-day period.² All of these patients were suffering from some form of malignant disease and four were receiving cytotoxic chemotherapy when they developed their infections. Five developed disseminated zoster, two of whom had panencephalitis. Two further patients had herpes simplex infections, one with severe ophthalmitis. In all cases the diagnosis was confirmed virologically by direct electron microscopy of vesicle fluid and by virus isolation. Latterly indirect immunofluorescence techniques have been used to demonstrate herpes simplex or varicella-zoster antigen in cells from the base of the patient's lesion. A response was defined as the arrest of progressive disease with no new lesions and resolution of fever.

Four of the five patients with herpes zoster, including one of those with panencephalitis, responded to treatment. The fifth patient, with progressive disease on treatment, failed to respond even when the dose of ara-A was doubled to 20 mg/kg/day. Of the two patients with herpes simplex, the one with ophthalmitis responded, while the other, with multiple facial lesions, failed to respond.

Myelosuppression occurred in three of these patients and four became drowsy during the infusion of ara-A. Gastrointestinal disturbance was minimal. Severe neuralgia occurred in two patients with herpes zoster and ara-A failed to relieve these symptoms.

Our experience with ara-A lends support to the findings of other workers that, although effective in preventing dissemination of disease

in the majority of patients, it fails to relieve neuralgia in herpes zoster.

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¹ Juel-Jensen, B, *Journal of Antimicrobial Chemotherapy*, 1976, **2**, 261.

² Keeney, R E, and Buchanan, R A, *Annals of the New York Academy of Sciences*, 1975, **255**, 185.

³ Johnson, M T, Luby, J P, and Buchanan, R A, *Journal of Infectious Diseases*, 1975, **131**, 225.

Low-dose progestogens and ectopic pregnancy

SIR,—We were most interested in the communication from Drs P Liukko and R Erkkola (20 November, p 1257) on the relative risk of ectopic pregnancy with the different progestogens (D-norgestrel, norethisterone, and lynoestrenol). Although structurally similar progestogens have varying effects on the female reproductive tract, the observed difference in the incidence of ectopic pregnancy for these three closely related 19-norsteroids seems particularly marked and far more pronounced than their relative contraceptive efficiency as indicated by the Pearl index quoted by these authors.

We should like to inquire if all three groups in this study were comparable for characteristics that influence the risk of pregnancy with continuous low-dose progestogens and for factors that might favour the development of an ectopic pregnancy. For example, was the form of hormone administration similar in all three groups—that is, were the tablets given in bottles or day-marked packs? In this context it is interesting to note that for tablets given in bottles it has been found that only 40% of patients follow this form of regimen conscientiously.¹ Were all members of the study of the same ethnic group and comparable in stature and weight? In relation to such considerations it has been observed² that effective contraception was achieved in Mexican women by a smaller dose of hormones administered on the sequential regimen than was needed for the larger British female patient. Equally important, were all the women of comparable age, married, and able to have unrestricted intercourse? Were they of proved fertility, having previously conceived with ease or was there any possibility of subfertility from a previous history of appendicitis, pelvic infection, or pelvic operations, factors which might not only prevent conception but favour ectopic pregnancy if conception did occur?

If this marked difference in the risk of ectopic pregnancy is valid then it indicates an impressive disparity of action between three closely related progestogens. It implies either (a) that lynoestrenol has a particularly efficient action on the cervical mucus, largely preventing any form of conception occurring, whereas norgestrel and norethisterone achieve their contraceptive effect principally by acting on the endometrium, thereby preventing intrauterine but not extrauterine pregnancy, or (b) that norgestrel and norethisterone, but not lynoestrenol, significantly affect tubal function and delay the passage of the fertilised ovum through the fallopian tube, thus favouring tubal or even ovarian³ implantation. Such