

## SCIENTIFIC LETTER

# Position and Mobilisation Post-Angiography Study (PAMPAS): a comparison of 4.5 hours and 2.5 hours bed rest

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After cardiac catheterisation, haemostasis is usually achieved by manual compression of the puncture site. The patient is then laid flat, allowed to sit up and then to mobilise—a process taking considerably longer than the procedure itself, and possibly involving more prolonged bed occupancy than is necessary. Well conducted, randomised, controlled trials of patient position (supine or upright) and duration of rest after catheterisation, with consistent use of the small calibre catheters used in contemporary practice, and robust definitions of haemorrhagic complications, are few, and include only small numbers of patients.<sup>1-3</sup> Consequently, a poll of 32 institutions in the UK in the year 2000 (conducted by SDP) revealed that the length of time patients are kept supine varies from 0–6 hours (mean 2.2 hours), with bed rest lasting from 3–24 hours (mean 5.7 hours).

We aimed to examine the safety of early sit-up and mobilisation after routine cardiac catheterisation in contemporary practice.

## METHODS

We performed a prospective, randomised, open label, controlled trial in which patients, who had undergone elective 6 French cardiac catheterisation via the femoral artery, were randomly assigned to either 4.5 hours bed rest, with sit-up (elevation of the head of the bed to 60°) after 4 hours (group A) or 2.5 hours bed rest, with sit-up after 1 hour (group B). The primary end point was vascular complications, comprising bleeding, haematoma, false aneurysm, transfusion, and surgical repair. Bleeding and haematoma were defined by the need for renewed compression, and false aneurysm was defined by the ultrasound appearance. The secondary end point was level of discomfort.

Inclusion criteria were: the presence of stable angina; a planned, elective diagnostic catheterisation; successful “single wall” puncture of the femoral artery; the use of a 6 French catheter; and written, informed consent. Exclusion criteria were: age < 18 years; inability to give informed consent; childbearing potential not fulfilling the requirements of the 10 day rule; participation in another study; coronary angioplasty performed at the same sitting; heparin treatment; warfarin with an international normalised ratio (INR)  $\geq$  2.0; a bleeding disorder; previous surgery to the iliac or femoral arteries; and right heart catheter performed at the same sitting.

Cardiac catheterisation was performed in the usual way, without systemic heparinisation. Immediately after sheath removal, manual arterial compression was maintained, for a minimum of 10 minutes, by a nurse or a doctor unaware of the randomisation. A questionnaire was provided to the patients at discharge, to be completed and returned by post subsequently. At 30 days the patients were contacted by telephone to capture late complications. Levels of discomfort pre- and 30 minutes, 2, 4, and 48 hours post-procedure were assessed using the McGill pain questionnaire.<sup>4</sup> The study was approved by the Sheffield research and ethics committee.

**Table 1** Total complications at all time periods post-procedure

	Group A (4.5 hours) n (%)	Group B (2.5 hours) n (%)	p Value
Death	0 (0)	0 (0)	0.99
Haematoma	34 (9.4)	44 (12.8)	0.146
Bleeding*	21 (5.8)	25 (7.3)	0.424
Vasovagal	7 (1.9)	9 (2.6)	0.539
False aneurysm	1 (0.3)	1 (0.3)	0.970
Total number of patients with complications†	54 (14.9)	66 (19.2)	0.127

\*Two patients bled at both time periods.

†This accounts for some patients having >1 complication.

## RESULTS

A total of 755 patients were randomised; 50 patients withdrew from the study, leaving 362 in group A and 343 in group B. Baseline demographic and basic medical data were comparable for the two groups. Details of the arterial puncture and compression after the procedure were also similar. The mean time to sit-up was 238 mins (group A) v 71 mins (group B) ( $p < 0.01$ ) and time to mobilisation was 273 mins (group A) v 167 mins (group B) ( $p < 0.01$ ). There were no deaths. One patient (0.3%) developed a false aneurysm and required late surgical repair in each group ( $p = 0.96$ ). There was no excess of other vascular complications in group B (table 1). There were significantly fewer reports of pain or discomfort at all times before hospital discharge in group B than in group A. There was no difference in the time to discharge between both groups, as specified in the study protocol.

## DISCUSSION

This study is one of the largest prospective, randomised, controlled trials addressing the question of early mobilisation following angiography to date. It shows that, following successful 6 French left heart catheterisation via the femoral artery, sit-up at 1 hour and mobilisation at 2.5 hours is at least as safe as sit-up at 4 hours and mobilisation at 4.5 hours. There was no significant excess of any complication with this regimen, and there were no life threatening events. Only one patient (0.3%) required surgical arterial repair in each group. The only other problems detected were small haematomas or re-bleeds, not significantly different in frequency between groups, which responded to further manual pressure.

The number of patients reporting pain and discomfort was lower in the rapid sit-up and mobilisation group. One of the most common complaints of patients undergoing invasive procedures via the femoral artery is backache induced by lying flat. Rapid sit-up (particularly) and mobilisation are, therefore, beneficial not only from a health economics standpoint, but also from that of patient comfort.

There is no reason why the time intervals for mobilisation in our study should be regarded as the ultimate achievable; we have simply "moved the target" forward for future study. Indeed, with 5 French and 4 French diagnostic catheters now the norm in our institution, even shorter mobilisation times may be possible. At least there is now a sound evidence base for centres using 6 French diagnostic catheters to move to a strategy of 1 hour sit-up plus 2.5 hour mobilisation. Furthermore, the manifest safety of such short sit-up and mobilisation times calls into question the role of sealing devices and alternative arterial access sites in the majority of patients undergoing routine diagnostic catheterisation.

Our results could be extended to earlier discharge from hospital. This was not done in our study (so that any late complications in the early mobilisation group could be detected). Because of the lack of excess complications in the early mobilisation group, however, there would seem to be no reason not to move towards earlier hospital discharge for all.

In conclusion, we have shown that early sit-up (1 hour) and mobilisation (2.5 hours) after routine, elective, 6 French left heart catheterisation via the femoral artery, with manual arterial compression, is as safe as sitting up at 4 hours and mobilisation at 4.5 hours.

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## IMAGES IN CARDIOLOGY.....

### An unusual complication of transvenous temporary pacing

**A** 63 year old woman was admitted with an inferior myocardial infarction complicated by complete heart block. A transvenous temporary pacing wire was inserted via the right subclavian vein and the procedure proceeded without problem. Chest x ray on completion of the procedure is shown below and the wire position appeared reasonable. She was pacing satisfactorily, however, with a right bundle branch block pattern and we therefore arranged for her to have an echocardiogram. Her echocardiogram revealed the

pacing wire to have crossed the interventricular septum and lie in the left ventricle as shown.

The temporary wire was removed without difficulty and the patient went on to have a permanent pacing system inserted several days later without further complication.

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