

Title: PULMONARY ARTERY CATHETERS: A PROSPECTIVE STUDY OF 2070 CONSECUTIVE PATIENTS

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INTRODUCTION & METHODS: Numerous case reports of morbidity and mortality caused by pulmonary artery catheters are available, but few large prospective series defining incidences and sequelae of complications have been reported. No studies exist reporting concomitant hospital mortality. From January, 1982, until April, 1983, data were entered into our computers documenting: 1) personnel, 2) insertion technique, 3) catheter function, and 4) complications for every pulmonary artery catheter inserted into all adult patients consecutively having open heart surgery in our hospital. All patients were heparinized prior to cardiopulmonary bypass and all catheters remained in the pulmonary artery during bypass.

RESULTS: Catheters (total = 2070) were inserted by: anesthesia residents and fellows 49.8% (1030), physician assistants 32.4% (671), staff anesthesiologists 15.6% (322), and medical students 2.3% (47). Sites of venous insertion included: right 97.7% (2022) and left 1.0% (20) internal jugular; right 1% (21) and left 0.3% (5) external jugular; and antecubital 0.1% (1). All veins were identified with #22 or smaller "finder" needles, and then cannulated with a #18 catheter over needle, followed by a guide wire, dilator, and sheath. Incidences of arterial punctures included: by the "finder" needles 3% (62), by the #18 gauge catheters

2.6% (53). No dilator or sheath entered an artery. 1.2% (25) hematomas resulted with one case cancelled due to hematoma. No neck explorations were necessary. Two pulmonary artery perforations occurred; one intraoperatively on weaning from cardiopulmonary bypass, and one in the ICU, with no mortality. One case of complete heart block was precipitated in a patient with documented 1° and left bundle branch block and treated with transvenous pacing. 81% of catheters (1679) functioned totally normally without fault until withdrawal. Positive blood cultures were obtained in 0.8% (17) patients; the identical organism was cultured from the pulmonary artery catheter in 0.1% (3). Two pneumothoraces, one internal jugular vein thrombosis, and no pulmonary infarctions occurred. Hospital mortalities were: 1.2% (22/1818) for CABG, 1.9% (3/155) for valves, 8.9% (6/67) for valve-CABG, 11.5% (3/26) for more complex surgeries and 1.6% (34/2070) for all cases.

DISCUSSION: These prospective data reveal our minimal risks associated with pulmonary artery catheters. We believe that the information obtained outweighs the risks involved and speculate that catheter use may have contributed to the low hospital mortality.