SUDDEN DEATH DURING HIP ARTHROPLASTY

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Introduction: Despite literature reports of sudden death during hip arthroplasty incidence and risk factor data are lacking. Methods: Intraoperative hip arthroplasty deaths between 1969 and 1997 were reviewed and compared to Total Joint Registry data on all arthroplasies. Mortality cases were reviewed in detail along with autopsy findings. Practice changes in 1988 aimed at minimizing fat embolization in high-risk patients prompted comparison of patients before and after 1988. Those changes included noncemented implant use in some and avoidance of pressurization and canal plugging, or drill holes to vent the femur above a plug, in others considered at risk. Results: 23 deaths occurred in 38,488 arthroplasies (0.06%). No deaths occurred during 15,411 noncemented arthroplasties, or during 8,608 revisions. 18/23 had a fracture diagnosis (4 pathological). 21/23 had known cardiovascular disease. Incidence of death for fracture cases was 5 times that for non-fracture cases (0.30% vs 0.06%) (p < 0.03). Pathological fractures treated with cement (4/97, 4.2%) had the highest mortality. Incidence of death for all arthroplasty patients between 1969 and 1988 was 19/21,895 (0.087%) vs 4/16,593 (0.024%) after 1988, a greater than threefold difference (p < .05). Autopsy in 13 showed pulmonary fat and marrow microemboli (11/13) and methacrylate particles (3/13). Conclusion; Elderly patients with pre-existent cardiovascular conditions, undergoing cemented arthroplasty, especially for fractures, are at increased risk for intraoperative death compared to elective patients. Altering patient implant selection and using techniques designed to minimize intramedullary hypertension in at risk patients can produce significant reductions in intraoperative mortality.

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