COST ANALYSIS OF MANAGEMENT STRATEGIES FOR CLOSED AND OPEN GRADE I TIBIAL SHAFT FRACTURES

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OBJECTIVES: To conduct a cost analysis of current competing strategies for the management of patients with closed and open grade I tibial shaft fractures, from both a governmental and societal perspective. METHODS: Our cost analysis was performed for four competing treatment strategies for management of closed or grade I open tibial fractures: 1). casting alone; 2). casting with therapeutic ultrasound; 3). operative treatment with non-reamed intramedullary nailing; and 4). operative treatment with reamed intramedullary nailing. The time to radiographic fracture union was used as the measure of effectiveness. Given the multiple clinical alternatives, each with the potential to result in a number of outcomes, a decision tree was used to perform all cost analyses. Sensitivity analysis was conducted through Monte Carlo simulations. RESULTS: From a governmental perspective the mean associated costs were USD $3365 (standard deviation [SD] ± 1425) for operative management by reamed intramedullary nailing, $3041 (SD ± 1363) for operative management by non-reamed intramedullary nailing, $5017 (SD ± 1370) for casting, and $5312 (SD ± 1474) for casting with therapeutic ultrasound. From a societal perspective the mean associated costs were ($12,449; SD ± 4894) for reamed intramedullary nailing, ($13,266; SD ± 3692) for casting with therapeutic ultrasound, ($15,571; SD ± 4293) for operative management by non-reamed intramedullary nailing, and ($17,343; SD ± 4784) for casting alone. CONCLUSIONS: Our preliminary cost analysis suggests that, from both a governmental and societal perspective, reamed intramedullary nailing is the treatment of choice for closed and open grade I tibial shaft fractures. However, there is evidence that, from a societal perspective, treatment of low energy tibial fractures with therapeutic ultrasound and casting may also be an economically-sound intervention.