

Shockwave is equally effective in treating tibial nonunion compared to standard of care surgery but cause significantly less direct health care costs

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1. Introduction

Delayed or non-healing bone fractures cause high suffering pressure in the affected patients, but also place high demands on the treating physician. In addition, protracted treatment through direct and indirect costs places a heavy burden on the socio-economic system. At present, surgical revision surgery is still the standard procedure, although recent studies indicate the high effectiveness of extracorporeal shock wave therapy (ESWT) in this indication.

2. Material & Method

Surgically treated tibial non-union from 2011 until 2018 in the AUVA trauma center Vienna, Meidling were retrospectively analyzed and compared to shockwave treated tibial non-unions from 2018 with respect to healing rate and direct health care costs.

3. Results

A healing rate of 73% (n=8) of previously non-healed tibial fractures was found after surgical intervention. A similar bony consolidation rate of tibial fractures was observed after shockwave therapy (82%; n=9). Considering the therapy-associated costs (surgical and inpatient treatment), there was a significantly lower financial expenditure for treatment with shockwaves (mean 2,943.4 € ± 619.1 € SD) compared to a surgical therapy with mean total costs of 13,381.4 € ± 9,241.3 € SD ($p < 0.0001$). In addition to the naturally significantly higher total surgical costs for surgically rehabilitated tibial pseudarthroses (mean 3054.3 € ± 1418.8 € SD) with an average surgical time of 156 minutes ± 69 minutes SD, it is primarily the ward costs (mean 13,381.4 € ± 9,241.3 € SD) that drive up the financial burden. Corresponding figures for shockwave treatment are 430.5 € average operation costs (± 128.5 € SD) with an average treatment time of 29 minutes (± 7 minutes SD). The mean ward costs amounted to 2,512.9 € (± 565.3 € SD).

4. Discussion

Same radiological healing rate of tibial pseudarthrosis was found with extracorporeal shockwave therapy in comparison to standard of care surgery. In the same time, however, ESWT cause significantly lower associated direct costs compared to surgical remediation. ESWT should therefore be considered the therapy of the first choice in this indication.