



Invited Commentary

Invited commentary ‘Comparison of three different bone graft methods for single segment lumbar tuberculosis: A retrospective single-center cohort study


ARTICLE INFO

Keywords:

Lumbar tuberculosis
Posterior debridement
Internal fixation
Bone graft

ABSTRACT

The study is designed to contrast the clinical efficacy of one stage posterior debridement with iliac bone graft, titanium mesh bone graft or granular bone graft in the surgical treatment of single segment lumbar tuberculosis [1].

1. Background & objective

The aim of this study was to retrospectively analyze the clinical efficacy and feasibility of three different bone graft methods: iliac bone graft, titanium mesh bone graft and granular bone graft for single segment lumbar tuberculosis [1]. Single segment lumbar tuberculosis is a disease primarily caused by distant metastasis from respiratory system infection, in this case setting the lumbar vertebrae which is very common among low-middle-income countries. China ranked second among the 30 countries with the highest TB burden, second only to India [2]. Lumbar Spinal Tuberculosis is the most frequent and serious form of skeletal TB and can cause vertebral collapse, spinal deformity, neurological injury, and even paraplegia. Conservative treatment with anti-TB chemotherapy is the mainstay treatment of LSTB therapy and can yield relatively good to excellent clinical outcomes in most patients although it can not prevent kyphotic aggravation which alternatively requires clinical surgical intervention not only to debride lesion but also to decompress the spinal cord, restore normal spinal alignment, and reconstruct the spinal stability.

2. Management

The background study by Dr. Yun-sheng Ou, Ph.D et al. of patients ninety-eight patients who underwent one stage posterior debridement, bone graft and internal fixation for single segment lumbar tuberculosis from 2015 to 2018 were involved in a study, involving 32 cases in iliac bone graft group, 32 case in titanium mesh bone graft group and 34 cases in granular bone graft group. The primary outcomes involved operative time, operative blood loss, postoperative hospital stay, visual analogue scale(VAS) score, erythrocyte sedimentation rate (ESR), C reactive protein (CRP), ASIA grade and postoperative complications. The secondary outcomes were Cobb angle correction and loss, and bone graft fusion time. All the outcomes were recorded and analyzed [1]. Compared with iliac bone graft and titanium mesh bone graft group, granular bone graft had shorter operative time ($P = 0.003$), less operative blood loss ($P = 0.010$) and shorter bone graft fusion time ($P < 0.001$). With the follow-up of 14–36 months, the VAS score, ESR,

CRP and neurological function in the three groups were all significantly improved ($P < 0.05$). The bone graft fusion time of the granular bone graft group was significantly shorter than iliac bone graft group and titanium mesh bone graft ($P < 0.05$), but no significant differences were found in the correction and loss of Cobb angle, and the incidence of complications among the three groups (n.s.) [1].

3. Prognosis

Granular bone graft has less surgical trauma and shorter bone graft fusion time compared with iliac bone graft and titanium mesh bone graft in the surgical treatment of single segment lumbar tuberculosis. The three methods may achieve comparable clinical efficacy in alleviating symptoms, correcting kyphosis and improving neurological function for appropriate cases. Anti-TB drugs combined with granular bone graft surgical interventional therapy proved very effective.

4. Summary and Outlook

The retrospective cohort study elaborates the current findings of the contrast of the three graft methods used in surgical treatment of single segment lumbar tuberculosis with analysis of treatment modalities which are most preferred and efficient in alleviating symptoms, correcting kyphosis, and improving neurologic functions in a specific case oriented fashion. The best surgical bone graft method in accordance to the study is granular bone graft, although the three methods may achieve comparable clinical efficacy in alleviating symptoms, correcting kyphosis, and improving neurological function for appropriate cases. It is imperative that the data further verifies that in contrast to iliac bone graft and titanium mesh bone graft, granular bone graft confers more achievable clinical efficacy.

5. Author summary

According to the latest report by the World Health Organization in 2018, the number of new cases of tuberculosis (TB) worldwide exceeded 10 million and the estimated number of deaths reached 1.6

DOI of original article: <https://doi.org/10.1016/j.ijjsu.2020.05.039>

<https://doi.org/10.1016/j.ijjsu.2020.05.095>

Received 24 May 2020; Accepted 30 May 2020

Available online 19 June 2020

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million in 2017 [3,4]. In the history of surgery multiple different bone graft methods have been explored in the clinical surgical treatment of single segment lumbar tuberculosis. Surgeons across the globe to date have strengthened a strategic surgical approach in addressing treatment of single segment lumbar tuberculosis which in the course of the years have although proved challenging, much progress has been achieved on one stage posterior debridement with iliac bone graft, titanium mesh bone graft and granular bone graft, the study intended to contrast the efficacy of the techniques mentioned above in clinical surgical treatment of single segment lumbar tuberculosis.

Provenance and peer review

Invited Commentary, internally reviewed.

Declaration of competing interest

The authors declare that there are no conflict of interests.

Acknowledgements

Thanks to authors and my family more especially my Mom and Dad for always standing with me with much believe and for the usual support and guidance in aiding me stand firm in my field of clinical medical practice.

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