



Review

Effects of resection margins on local recurrence of osteosarcoma in extremity and pelvis: Systematic review and meta-analysis



Fangzhou He ^a, Weibin Zhang ^{a,b,*}, Yuhui Shen ^{a,b,**}, Pei Yu ^a, Qiyuan Bao ^a, Junxiang Wen ^a, Chuanzhen Hu ^a, Shijing Qiu ^{a,b,c}

^a Department of Orthopedics, Ruijin Hospital, Shanghai Jiao Tong University School of Medicine, Shanghai, China

^b Shanghai Institute of Traumatology and Orthopedics, Ruijin Hospital, Shanghai Jiaotong University School of Medicine, Shanghai, China

^c Bone and Mineral Research Laboratory, Henry Ford Hospital, Detroit, MI, USA

HIGHLIGHTS

- This study provides strong evidence (level IIa) that adequate or wide margin can reduce the risk of local recurrence.
- In the condition of same margin, pelvic osteosarcoma is more likely to develop local recurrence than that in extremity.
- The systematic review considered all related article, and the results were reliable assessed by sensitivity analysis.

ARTICLE INFO

Article history:

Received 7 October 2016

Accepted 5 November 2016

Available online 10 November 2016

Keywords:

Osteosarcoma
Surgical margin
Local recurrence
Extremity
Pelvis

ABSTRACT

Purpose: There are conflicting findings about the effect of resection margins on local recurrence in osteosarcoma after surgery. In this meta-analysis, we examined the association between local recurrence and resection margins for osteosarcoma in extremity and pelvis.

Methods: EMBASE, PubMed and Cochrane CENTRAL were searched from January 1980 to July 2016. The quality of included studies was evaluated using the Newcastle-Ottawa Quality Assessment Scale. The odds ratio and 95% confidence interval of local recurrence were estimated, respectively, for inadequate vs adequate margins and marginal vs wide margins using a random-effect model. Chi-square test was performed to comparing the local recurrence rate between extremity and pelvic osteosarcomas with an identical surgical margin.

Results: Thirteen articles involving 1559 patients (175 with and 1384 without local recurrence) were included in this study. The meta-analysis showed that the osteosarcoma resected with inadequate and marginal margins, whether in extremity or in pelvis, were associated with a significantly higher local recurrence rate than the osteosarcoma resected with adequate and wide margins, respectively. Chi-square test showed that, when pelvic and extremity osteosarcomas were removed with an identical resection margin, the local recurrence was significantly more frequent in pelvic osteosarcoma than in extremity osteosarcoma.

Conclusion: This study provides level IIa evidence to support that the surgery with adequate or wide resection margin has positive effect on reducing the risk of local recurrence in osteosarcoma. In addition, the factors independent of resection margin are more likely to increase the risk of local recurrence in pelvic osteosarcoma.

Level of evidence: Level IIa, Therapeutic study.

© 2016 IJS Publishing Group Ltd. Published by Elsevier Ltd. All rights reserved.

* Corresponding author. Department of Orthopedics, Ruijin Hospital, 197 Ruijin er Road, Shanghai, China.

** Corresponding author. Department of Orthopedics, Ruijin Hospital, 197 Ruijin er Road, Shanghai, China.

E-mail addresses: zhang.wb@yahoo.com (W. Zhang), yuhuis@163.com (Y. Shen).

1. Introduction

Osteosarcoma is a primary malignant tumor of bone, in which the malignant cells produce osteoid [1]. The annual incidence of osteosarcoma is about 10–26 per million worldwide [2]. The 5-year survival in patients with osteosarcoma was less than 20% in the

1950s [3]. These patients were mainly treated by limb amputation and most of them died of lung metastases [4,5]. Since the 1970s, the advent of multi-agent chemotherapy has shed a new light on the management of osteosarcoma [5]. However, the cure rate is also low for osteosarcoma treated exclusively with chemotherapy [6]. In combination of adjuvant chemotherapy with surgical resection, the 5-year survival rate has increased to 60–70% [7–9]. Currently, limb-salvage surgery is preferred over amputation for osteosarcoma treatment owing to the similar survival rate [5,10,11]. More importantly, limb-salvage surgery can provide better function and quality of life [12,13].

A larger number of limb-salvage surgery undertaken for osteosarcoma is inevitably associated with a reduction of surgical margins in order to avoid hurting the important structures, such as nerves and blood vessels, and retain enough bone and muscular tissues for function restoration [14]. Enneking et al. [15] defined the surgical margins as intralesional, marginal, wide, and radical in accordance with the location of their resection plane. Intralesional margin is created when the resection is located within the tumor, whereas marginal margin is created when the resection is performed within the reactive zone surrounding the tumor. When the resection extends through normal tissue beyond reactive zone, it is refer to as wide margin. Radical margin was defined by a resection

of entire bony or myofascial compartment that contains osteosarcoma. Wide and radical margins are regarded as adequate margins, while intralesional and marginal margins are regarded as inadequate margins [7,16]. The resection margin has been considered as a key issue to predict prognosis in osteosarcoma after surgery. Local recurrence remains a serious problem, which occurs in 10–15% of patients treated with limb-salvage surgery [17,18]. The width of resection margin has been considered as a predicting factor for local recurrence [19,20]. Inadequate margin would increase the incidence of local recurrence of osteosarcoma, which may adversely affect survival [21,22]. However, the width of safe margin still remains controversial [20].

The purpose of performing this meta-analysis was to determine the effect of resection margins on local recurrence in osteosarcoma, especially the difference between marginal margin and wide margin surgeries.

2. Materials and methods

2.1. Search strategy

This meta-analysis was registered at <http://www.researchregistry.com> (UIN: reviewregistry125). Bibliographic

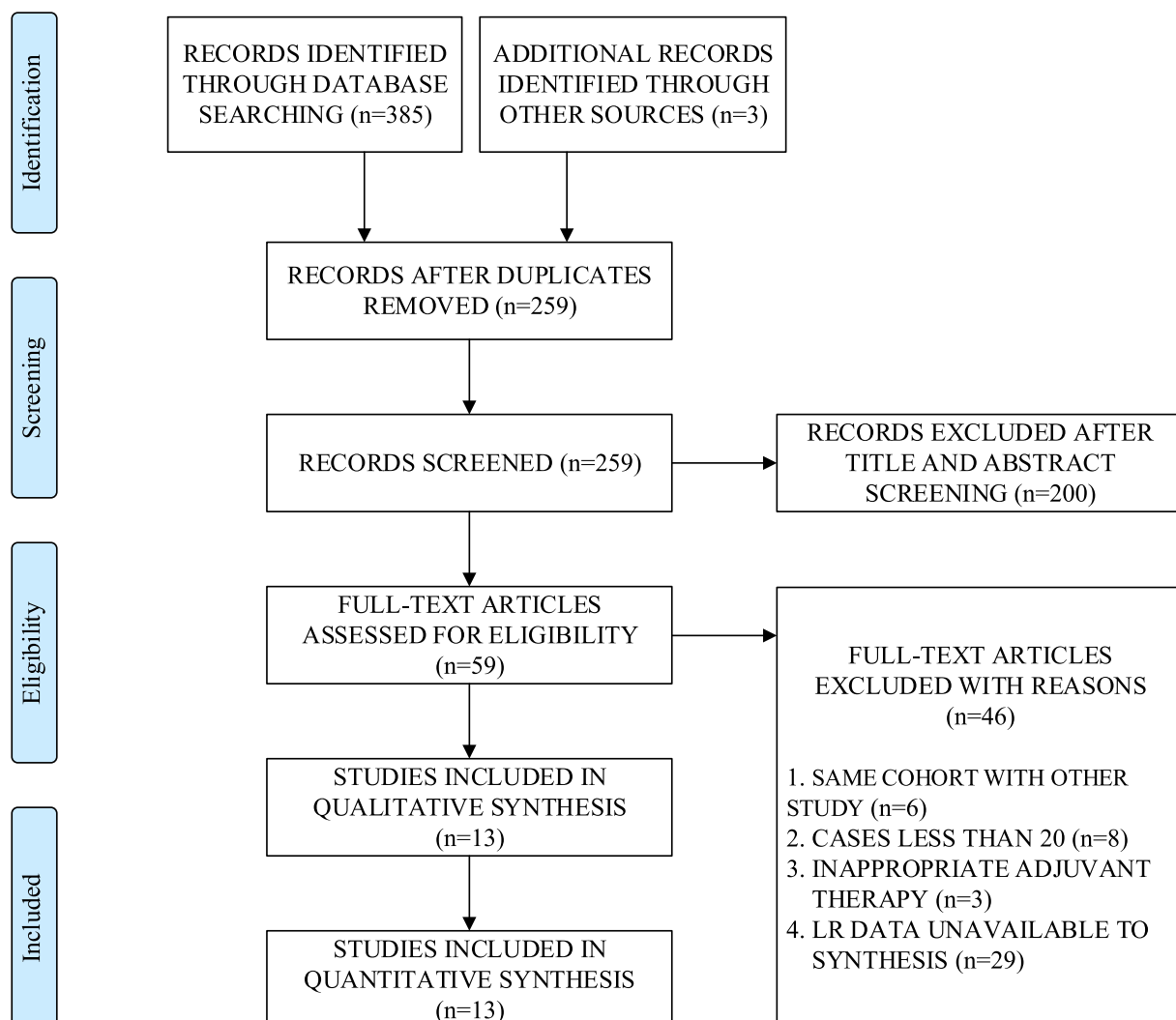


Fig. 1. Flowchart for the process of study selection.

Download English Version:

<https://daneshyari.com/en/article/5731883>

Download Persian Version:

<https://daneshyari.com/article/5731883>

[Daneshyari.com](https://daneshyari.com)