

## NON-UNION RATES FOLLOWING CROSSED COMPRESSION SCREW FIXATION FOR 1ST MTPJ ARTHRODESIS: A SINGLE CENTRE STUDY

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## ЧЕСТОТА НА НЕСРАСТВАНИЯТА СЛЕД КРЪСТОСАНА ФИКСАЦИЯ С КОМПРЕСИОННИ ВИНТОВЕ ЗА АРТРОДЕЗА НА ПЪРВА МЕТАТАРЗОФАЛАНГЕАЛНА СТАВА: ЕДНОЦЕНТРОВО ПРОУЧВАНЕ

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<b>Summary:</b>	The fusion of the first metatarsophalangeal joint is a well described procedure that has been shown to have a dramatically positive effect on pathology of the joint. These include a variety of indications such as hallux rigidus, hallux valgus and rheumatoid arthritis. There are a myriad of methods described in the literature on how this fusion can be achieved. These range from simple Kirschner wire fixation, dorsal plates with or without screws, to the sole use of screw fixation. This study is aimed at analyzing the success of crossed compression screws with regards to union and complication rates.
<b>Key words:</b>	fusion, MTPJ, screws, compression
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<b>Резюме:</b>	Фузията на първа метатарзофалангеална става е добре описана процедура, която е с доказан забележимо положителен ефект върху патологията на ставата. Индикациите са разнообразни и включват hallux rigidus, hallux valgus и ревматоиден артрит. В литературата са описани многобройни методи за постигането на фузия. Техният диапазон включва от обикновена фиксация със спица на Kirschner, дорзални пластини със или без винтове, до употребата само на фиксация с винтове. Целта на изследването е да се анализира ефективността на кръстосани компресионни винтове по отношение на честотата на срастванията и усложненията.
<b>Ключови думи:</b>	фузия, метатарзофалангеална става, винтове, компресия
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### INTRODUCTION

There have been different methods that have been employed for the arthrodesis of the 1st MTPJ regardless of the indication. All methods have the pri-

mary aim of fusion of the joint but literature shows that this is certainly not achieved in all cases and a common complication is non-union. Currently the accepted rate of non union is around 5% based on a recent systematic review study and this was inclu-

sive of all methods of fusion. Objectives This study is primarily aimed at the analysis of non-union rates in one centre when comparing a crossed compression



Fig. 1. Hallux Valgus

screw technique with a variety of other techniques used. Indications for fusion included hallux rigidus, hallux valgus as well as rheumatoid arthritis.



Fig. 2. Headless compression screw (variable pitch)

## METHODS

There were 42 patients who had crossed screw fusions performed by a single surgeon over a 2 year period from January 2013 to July 2015. There were 27 females and 15 males with an average age of 57.6 years (41-78). Union of the MTPJ in this group was determined on radiological and clinical evidence and radiographs were taken at 6 weeks and 3 months after the procedure. Results A total of 105 patients underwent 1st MTPJ fusions by a variety of surgeons and methods over the same period in the same centre. This group had 35 males and 70 females with an average age of 62.8 years (38-86).

Number of cases	42
Sex – male:female	15:27
Age (years)	41-78 (mean 57.6)
Follow up (months)	1.5-18 (mean 3 months)
Time to union	6 weeks-12 months (mean 3.2 months)
Infection rate	0%

## RESULTS

Out of the included cases, 40 were due to osteoarthritis and 2 due to rheumatoid arthritis. There was a 100% rate of union and no cases of infection within the entire cohort. There was one case of hardware removal (2.3%). The average to union was 3.2 months ranging from 6 weeks to 18 months.

## CONCLUSIONS

We found that the use of crossed headless compression screws resulted in no non unions and only 1 case

of hardware removal. This complication rate was lower than when compared to the alternative group. Therefore we suggest that crossed compression screw method is used as the gold standard for fusion of the 1ST MTPJ instead of any other screw or plating configurations.

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