

Response to: 'The role of infrapatellar fat pad resection in total knee arthroplasty' by White *et al*

We thank White and Melhuish¹ for their interest in our original paper² and our response³ to Bai *et al.*⁴

There is moderate level evidence in a recent systematic review showing that infrapatellar fat pad (IPFP) preservation improves clinical outcomes post total knee arthroplasty (TKA), whereas IPFP resection increases post-TKA knee pain.⁵ This is contradictory with a previous systematic review suggesting that there were no differences in function, range of motion and anterior knee pain between preservation and resection groups after TKA in knee osteoarthritis (OA).⁶ This new evidence is consistent with our findings that the IPFP maximal area was associated with reduced knee pain, decreased loss of cartilage volume and reduced risks of increases in cartilage defects cross-sectionally in older adults⁷ and longitudinally in older women,² indicating a beneficial effect of IPFP size.

More epidemiological and clinical studies are emerging to show that IPFP size or preservation in TKA may have protective roles for knee symptoms and structural changes in knee OA. Teichtahl *et al*⁸ reported that a larger IPFP at baseline was significantly associated with reduced knee pain at follow-up and decreased lateral tibial cartilage volume loss, and Cai *et al*⁹ reported that greater IPFP volume was associated with greater tibial and patellar cartilage volume, and fewer cartilage defects, bone marrow lesions and osteophytes in patients with knee OA. The findings from Gwyn *et al*'s retrospective study¹⁰ showed that complete resection of IPFP was associated with patellar tendon shortening 1 year after TKA, while there was no significant change in tendon length with partial resection of IPFP.

In contrast, IPFP with abnormal quality may play a detrimental role in knee OA. Our recent study demonstrated that IPFP signal intensity alteration, which was negatively associated with maximum area of IPFP, was associated with increased knee cartilage defects, subchondral bone marrow lesions and knee pain, and decreased knee cartilage volume cross-sectionally and longitudinally in older adults.¹¹ Consistently, we reported that some IPFP signal intensity measures, assessed using a semi-automated quantitative method, were consistently associated with increased structural abnormalities of the knee in patients with knee OA.¹²

All these evidences support our hypothesis that IPFP would have biphasic effects in knee OA: it may have a beneficial role physiologically through increased size, but could be detrimental when pathological changes are observed as signal intensity alteration on MRI. We proposed that IPFP with normal qualities, rather than abnormal qualities, should be preserved or not damaged during knee surgery,³ which needs to be tested by well-designed randomised controlled trials.

In summary, we cannot totally agree with White's view that 'practice should transition to favour IPFP preservation where possible', but suggest to have IPFP quality evaluated using MRI before an action (IPFP preservation or resection) is taken in TKA. If there are no significant signal intensity alterations within IPFP, IPFP should be preserved during TKA. High quality randomised controlled trials with appropriate sample size and outcome measures are required to determine our hypothesis.

Weiyu Han,^{1,2} Faming Pan,^{3,4} Zhenhua Liu,^{1,2} Zhaohua Zhu,¹ Xia Wang,¹ Shuang Zheng,¹ Benny Antony,¹ Changhai Ding^{1,4,5}

¹Menzies Institute for Medical Research, University of Tasmania, Hobart, Australia
²Department of Orthopedics, The Third Affiliated Hospital of Southern Medical University, Guangzhou, China

³Department of Epidemiology and Biostatistics, School of Public Health, Anhui Medical University, Hefei, Anhui, China

⁴Arthritis Research Institute, 1st Affiliated Hospital, Anhui Medical University, Hefei, Anhui, China

⁵Department of Epidemiology and Preventive Medicine, Monash University, Melbourne, Australia

Correspondence to Professor Changhai Ding, Private Bag 23, Hobart, Tasmania 7000, Australia; Changhai.Ding@utas.edu.au

Contributors All authors contributed to this article.

Competing interests None declared.

Patient consent Obtained.

Ethics approval Approved by the Southern Tasmanian Health and Medical Human Research Ethics Committee.

Provenance and peer review Commissioned; internally peer reviewed.



CrossMark

To cite Han W, Pan F, Liu Z, *et al.* *Ann Rheum Dis* 2016;**75**:e67.

Received 4 July 2016

Revised 13 July 2016

Accepted 16 July 2016

Published Online First 3 August 2016

Ann Rheum Dis 2016;**75**:e67. doi:10.1136/annrheumdis-2016-210170

REFERENCES

- White LD, Melhuish TM. The role of infrapatellar fat pad resection in total knee arthroplasty. *Ann Rheum Dis* 2016;**75**:e66.
- Pan F, Han W, Wang X, *et al.* A longitudinal study of the association between infrapatellar fat pad maximal area and changes in knee symptoms and structure in older adults. *Ann Rheum Dis* 2015;**74**:1818–24.
- Pan F, Han W, Wang X, *et al.* Response to 'Infrapatellar fat pad maximal area and changes in knee symptoms: gender-related difference or gender difference in reporting?' by Bai *et al.* *Ann Rheum Dis* 2016;**75**:e4.
- Bai HX, Lee AM, Wang Z, *et al.* Infrapatellar fat pad maximal area and changes in knee symptoms: gender-related difference or gender difference in reporting? *Ann Rheum Dis* 2016;**75**:e3.
- White L, Holyoak R, Sant J, *et al.* The effect of infrapatellar fat pad resection on outcomes post-total knee arthroplasty: a systematic review. *Arch Orthop Trauma Surg* 2016;**136**:701–8.
- Van Beeck A, Clockaerts S, Somville J, *et al.* Does infrapatellar fat pad resection in total knee arthroplasty impair clinical outcome? A systematic review. *Knee* 2013;**20**:226–31.
- Han W, Cai S, Liu Z, *et al.* Infrapatellar fat pad in the knee: is local fat good or bad for knee osteoarthritis? *Arthritis Res Ther* 2014;**16**:R145.
- Teichtahl AJ, Wulidasari E, Brady SR, *et al.* A large infrapatellar fat pad protects against knee pain and lateral tibial cartilage volume loss. *Arthritis Res Ther* 2015;**17**:318.
- Cai J, Xu J, Wang K, *et al.* Association between infrapatellar fat pad volume and knee structural changes in patients with knee osteoarthritis. *J Rheumatol* 2015;**42**:1878–84.
- Gwyn R, Kotwal RS, Holt MD, *et al.* Complete excision of the infrapatellar fat pad is associated with patellar tendon shortening after primary total knee arthroplasty. *Eur J Orthop Surg Traumatol* 2016;**26**:545–9.
- Han W, Aitken D, Zhu Z, *et al.* Signal intensity alteration in the infrapatellar fat pad at baseline for the prediction of knee symptoms and structure in older adults: a cohort study. *Ann Rheum Dis* 2016;**75**:1783–8.
- Lu M, Chen Z, Han W, *et al.* A novel method for assessing signal intensity within infrapatellar fat pad on MR images in patients with knee osteoarthritis. *Osteoarthritis Cartil* 2016. <http://dx.doi.org/10.1016/j.joca.2016.06.008>