

CASE REPORT

# Tracking a painful episode after a joint replacement using patient-reported outcome measures (PROMs)

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**SUMMARY**

Patient-reported outcome measures (PROMs) are an important tool in measuring the benefit of a surgery for patients and for clinicians. The results of such assessment tools can be used to monitor patient progress or initiate intervention. The scores also provide a reproducible evaluation of functional recovery and well-being after surgery. We report the case of a 68-year-old woman who underwent left unicondylar knee replacement in November 2011 followed by right unicondylar knee replacement in April 2012. Prospective, web-based electronic PROMs were used preoperatively and every 6–12 months postoperatively to monitor the improvement in pain and function symptoms. These outcome measures were beneficial in helping to monitor an episode of new pain in her left knee, without requiring invasive or extensive investigation.

away from surgical waiting times towards assessing the quality of care in the performance of surgeons and institutions.<sup>1 2</sup> Patient-reported outcome measures (PROMs) are a key part of assessing patient experience and functional outcome after surgery. The collection of PROMs is slowly becoming more routine, commonly involving a condition-specific score, for example the Oxford Knee Score, in conjunction with a generic questionnaire, for example the howRu score.<sup>3</sup> These question sets measure what matters to patients in terms of pain and functional impact the condition has on their daily lives.<sup>4</sup>

Web-based PROMs improve patient participation compared with traditional paper questionnaires, record information, and make results and trends available to the patient and their clinical team in real time.<sup>5</sup>

**BACKGROUND**

The success of any operation should be measured by the improvement in symptoms that matter most to patients. After publication of the Darzi Report in 2008, the National Health Service focus has shifted

**CASE PRESENTATION**

A 68-year-old woman presented to the orthopaedic clinic with medial left-sided knee pain in September 2011. She was struggling to walk more than 10 m on flat ground due to her knee pain. Her Oxford



Figure 1 HowRU score of the left knee.



Figure 2 Oxford Knee Score of the left knee.

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Figure 3 HowRU score of the right knee.

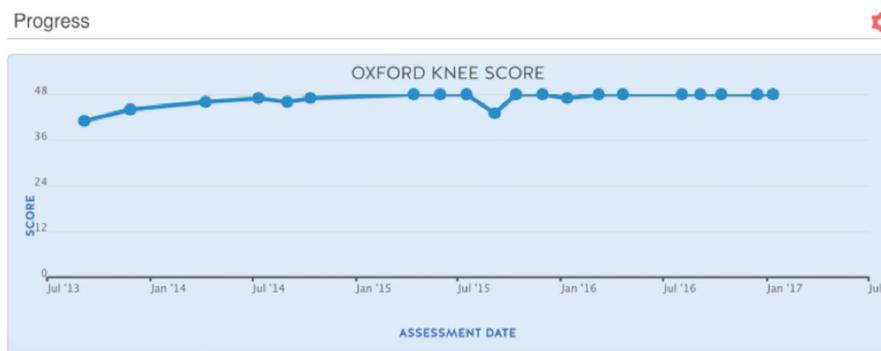


Figure 4 Oxford Knee Score of the right knee.

Knee Score was 14/48. On examination, she had a full pain-free range of movement in her left hip and tenderness isolated to the medial compartment of the left knee with a restricted range of motion approximating to 0°–110° of flexion. Ligament assessment was stable without distal neurovascular deficit.

X-ray film assessment of the left knee demonstrated loss of joint space in the medial compartment of her knee suitable for unicompartmental knee replacement. Following discussion of risks and benefits, ensuring that non-operative treatments had been exhausted, the patient progressed to surgery.

At her routine postoperative follow-up appointment, the patient was delighted with the early outcome. Given this experience, and with an identical pattern of symptoms affecting the opposite knee and an Oxford Knee Score of 17/48, surgery was discussed for the second side. X-ray films confirmed medial-sided arthritis and a unicompartmental knee replacement was performed on her right knee.

#### OUTCOME AND FOLLOW-UP

PROM scores were completed regularly during the postoperative period, demonstrating an improvement in symptoms (figures 1 and 2). However, at 1 year following surgery, the patient complained of sharp lateral-sided knee pain. An MRI scan did not show any lateral compartment involvement. The painful episode was tracked using regular web-based PROM score (figure 1) and within 6 months the pain had resolved. The surgical team could monitor both knees remotely using a web-based platform (www.MyClinicalOutcomes.com), reducing the requirement for face-to-face outpatient follow-up (figures 1–4).

#### DISCUSSION

PROMs are an effective way of assessing surgical outcomes, focusing on the perioperative function of the patient.<sup>1–8</sup> The

shifting of focus towards patient-reported outcomes to determine the outcome of surgery requires that PROM collection becomes more routine. Linking to funding in the future will ensure that healthcare systems capture what works and what does not work.<sup>8</sup>

Currently the National Patient Reported Outcome Measures Programme measures data on four conditions at two time points and is published at a hospital level 6–9 months following collection. The data are not available either to the patient or surgical team, and so cannot aid clinical decision making in real time.<sup>9</sup> The surgical team here was able to follow the patient’s pain and function remotely, reducing the frequency of hospital visits. On measuring and seeing an improvement, invasive investigations and treatments of this painful prosthetic joint were avoided.

#### Learning points

- ▶ Patient-reported outcome measures (PROMs) allow efficient monitoring of patient symptoms before and after surgery.
- ▶ PROMs can track acute postoperative painful episodes and prevent invasive investigations.
- ▶ PROMs provide real-time validated outcome measures for both the patient and the clinician.

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**Competing interests** DHW is cofounder of myclinicaloutcomes.com, a web-based PROMs system.

**Patient consent** Obtained.

**Provenance and peer review** Not commissioned; externally peer reviewed.

## REFERENCES

- 1 Darzi A. High quality care for all: NHS Next Stage Review final report, 2008. [http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH\\_085825](http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_085825). (accessed 12 Apr 2017).
- 2 Maybin J. High Quality Care For All. <https://www.kingsfund.org.uk/sites/files/kf/briefing-high-quality-care-for-all-jo-maybin-ruth-thorby-kings-fund-july-2008.pdf> (accessed 12 Apr 2017).
- 3 Dawson J, Doll H, Fitzpatrick R, *et al.* The routine use of patient reported outcome measures in healthcare settings. *BMJ* 2010;340:c186.
- 4 Black N. Patient reported outcome measures could help transform healthcare. *BMJ* 2013;346:f167.
- 5 Roberts N, Bradley B, Williams D. Use of SMS and tablet computer improves the electronic collection of elective orthopaedic patient reported outcome measures. *Ann R Coll Surg Engl* 2014;96:348–51.
- 6 Bilimoria KY, Cella D, Butt Z, Copyright BZ. Current challenges in using patient-reported outcomes for surgical care and performance measurement: everybody wants to hear from the patient, but are we ready to Listen? *JAMA Surg* 2014;149:505–6.
- 7 Devlin NJ, Parkin D, Browne J. Patient-reported outcome measures in the NHS: new methods for analysing and reporting EQ-5D data. *Health Econ* 2010;19:886–905.
- 8 Cave J, Cooke M, Chantler C, *et al.* Department of Health High quality care for all: NHS Next Stage Review final report. 2008 [http://www.dh.gov.uk/en/Publication-andstatistics/Publications/PublicationsPolicyAndGuidance/DH\\_085825](http://www.dh.gov.uk/en/Publication-andstatistics/Publications/PublicationsPolicyAndGuidance/DH_085825) (accessed 12 Apr 2017).
- 9 Baker PN, Deehan DJ, Lees D, *et al.* The effect of surgical factors on early patient-reported outcome measures (PROMS) following total knee replacement. *J Bone Joint Surg Br* 2012;94(8):1058–66.

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