Development of a novel Triage Tool for Knee Osteoarthritis

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Abstract:

Objective: To evaluate a triage tool, based on patient self-report disability assessment and standardized radiographic score, for patients referred to an orthopedic clinic for TKA surgery with a diagnosis of knee pain or knee osteoarthritis (OA). To compare the triage tool's decision regarding appropriateness for surgery to information provided in the referral letter from the primary care physician.
Design: A prospective study to assess the correlation of a triage tool comprised of a standardized radiographic assessment and a patient derived disability assessment to clinical decision making by the orthopedic surgeon.
Setting: Medium sized Canadian teaching hospital.
Participants: Patients with knee pain seen during their initial referral to one of four orthopedic surgeons over a 1-year period.
Interventions: Patients underwent a standardized battery of self- report disability questionnaires; SF 12, WOMAC, Tegner & Lysholm questionnaire, Functional Comorbidity Index and an Inflammatory Disorder Questionnaire and standardized radiographs in addition to their usual consult with an orthopedic surgeon. The referral letter from the primary care physician was scored based on the criteria of the Western Canada Wait List Priority Referral Score (WCWL-PRS).
Results: Of the 173 patients referred, 63 (36.4%) were booked for major reconstructive surgery, of whom 97% underwent TKA and 2% HTO. The information provided by the referral letters was not sufficient to calculate a WCWL-PRS (Priority Referral Score). There was no correlation between the information provided by the referral letter for patient's pain, disability and functional limitations as to whether patients were booked for surgery. The self-report disability questionnaire and standardized radiographic score both correlated strongly with the decision to undergo surgery (p <.001).
Conclusion: These preliminary results suggest that an evidence based triage tool based on the combination of Disability Evaluation and Radiographic Grading may be useful to determine the need for TKA surgery. It may allow for patients with high scores to be rapidly seen by an arthroplasty surgeon, while subjects with low scores may be referred to non-surgical care.

Introduction.

The management of patients with osteoarthritis in jurisdictions with a single government payer is characterized by significant waits from referral to consultation (wait time 1) and from consultation to surgery (wait time 2). Wait 2 times have been extensively researched, but only recently has there been increasing interest in the wait 1 time. In the UK, the NHS has created guidelines for appropriateness of referral for OA, stating that "to determine severity of impairment, and hence priority of referral for TJR, the referral should take into account the extent to which the condition is causing pain, disability, sleeplessness, loss of independence, inability to undertake normal activities and reduced functional capacity." [1]

One method to expedite care is to use advanced practice physiotherapists (APPs) in orthopedic clinics in order to; "triage patients for surgery, prescribe conservative management and monitor patients on an ongoing basis." [2] It has been shown that APPs can effectively manage over 30% of the patients referred to a surgeon for hip or knee replacement surgery, since these patients do not require surgery. Furthermore, APPs and orthopaedic surgeons agree on the recommendation of appropriateness of patients being surgical candidates (kappa>.70), with physiotherapists having a lower threshold to refer for surgical consultation. [3] Also, these clinic settings add time and costs to the evaluation.

Similarly, a triage clinic staffed by trained physicians using standardized tools halved the number of surgical consultations suggesting that primary care physicians are uncertain as to the criteria for surgical consultation. [4]

Our project was designed to determine if the same triage function could be performed by a patient self-report questionnaire of musculo-skeletal disability combined with a standardized radiographic assessment for patients with knee OA. Our hypothesis is that it will be able to identify patients who clearly meet the criteria for TKA, and those for whom non-surgical treatment is indicated.

Methods:

184 consenting patients over the age of 35 were prospectively enrolled into the study. Patients were enrolled from the new patient referrals to one of four orthopedic surgeons at a medium sized Canadian academic centre. Eleven subjects were not included due to incomplete data sets or diagnoses other than knee pain (i.e. referred hip and back pain). There were 173 subjects included in the analysis. In addition to their orthopedic consultation, participants completed 5 disability questionnaires: SF 12, WOMAC, Tegner & Lysholm questionnaire, Functional Comorbidity Index and an Inflammatory Disorder Questionnaire. Additional clinical evaluation included a WCWL-HKPT score , standardized weight bearing radiographs of their affected knee and a record of their diagnosis and treatment plan, including any proposed surgical treatment.
The referral letter from the primary care physician was scored based on the NHS NICE guidelines, (criteria of pain, disability, sleeplessness, loss of independence, inability to undertake normal activities), to determine if it contained the necessary information to allow for assessment of priority.

Methods (cont.):

Standardized radiographic assessment was performed on the most-damaged tibiofemoral compartment evaluated from frontal weight bearing image and the skyline patella-femoral image. Grading of the tibiofemoral radiographs scored as joint space width (0-3), femoral osteophytes (0-3), tibial erosion (0-4) and subluxation (0-3) were combined for a total score from zero to 13. [5] Radiographic assessment was performed by trained readers who were blinded to the clinical data.**

The diagnosis and decision for surgery was performed by the orthopedic surgeon. This was done independently from the data collection of the clinical disability questionnaires, which were completed by the subjects and the research coordinator. The research coordinator, an Advanced Practice Physiotherapist determined the WCWL-HKPT score.

Results:

The majority of referral letters did not include the minimum data necessary to allow for prioritization of the referral regarding the severity of the patient's condition.

	No	%	Yes	%
Referral letter addressed Pain Severity	121	74.2	42	25.8
Referral letter addressed Limitations in ADL	93	57.8	68	42.2
Referral letter addressed Physical Abnormalities	112	68.7	51	31.3

There was no correlation between whether the referral letter addressed any of the priority criteria (extent of pain, radiographic abnormalities and impairment in ADL) and whether the patient was booked for surgery.

63 of the subjects were booked for surgery (61 TKA, 2 osteotomy). The patients booked for surgery were statistically significantly older with worse Quality of Life scores and worse arthritis specific disability scores. The WOMAC score for those subjects booked for surgery was 51.34 (SD13.3) which was higher than the scores for patients treated non-surgically 32.2(SD21.8) (p<0.001). The subjects booked for surgery had higher WCWL-HKPT scores than the non-surgical group (p<.001). Cases booked for surgery had higher radiographic scores of 6.8 (SD2.2) compared to scores for non-surgical cases 4.5 (SD1.7) (p<0.001).

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Results: Table 1: Comparison of subjects booked for surgery (n=63) versus not booked for surgery (n=110).	Booked for Surgery Mean (std dev)	Not Booked for Surgery Mean (std dev)	p
Age	68.2 (10.80)	63.63 (9.9)	.005
PCS from SF-12	32.8 (7.6)	38.75 (9.7)	< 0.001
MCS from SF-12	48.6 (11.5)	52.51 (10.9)	.039
WOMAC pain scored 0-20	8.6 (2.7)	6.0 (3.4)	< 0.001
WOMAC stiffness scored 0-8	4.7 (1.7)	3.6 (1.8)	< 0.001
WOMAC function scored 0-68	37.5 (10.2)	24.3 (14.8)	< 0.001
WOMAC total score 0-96	51.3 (13.3)	33.9 (19.1)	< 0.001
Pre-Injury (0-10, 0=disability)	6.5 (1.9)	3.9 (2.2)	.004
Lysholm (0-100, 100=no problems)	39.9 (16.1)	55.3 (18.7)	< 0.001
Total WCWL (100 is worst)	57.5 (19.1)	32.2 (21.8)	< 0.001
X-ray Joint space	2.5 (.69)	1.8 (.70)	< 0.001
X-ray Osteophytes	2.2 (.75)	1.6 (.71)	< 0.001
X-ray Tibial erosion	.97 (.92)	.21 (.56)	< 0.001
X-ray Total Score	6.8 (2.2)	4.5 (1.7)	< 0.001

Conclusions:

The quality of information provided by referring physicians for patients with knee OA is not sufficient to allow for prioritization of the referral. A triage tool consisting of self-administered disability questionnaire and standardized radiographic data may provide more information than standard physician referrals and allow for determination of urgency of referral. The triage tool may identify those patients who are clearly candidates for TKA, and may expedite their care. Additionally the triage tool may identify patients with low disability and low radiographic scores who are not candidates for TKA. These individuals could be referred to physiotherapists or other health care providers for the most appropriate non-surgical treatment.

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** See Sheehy et al Poster # 380 Reliability of a Unicompartmental Grading for Knee OA