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Need for radiologists to interpret orthopedic total joint radiographs

We believe that the methodology employed by Nayak and colleagues in their study "Interpretation by radiologists of orthopedic total joint radiographs: Is it necessary or cost-effective?" (*Can J Surg* 1996;39 (5):393-6) has significant problems. There are factual errors in the initial paragraph: (1) Most private offices in Canada that have many orthopedic patient visits have the total joint radiographs interpreted by the attending radiologist. (2) It is not the policy of our institution that all radiography must be performed by the Department of Radiology, since the Division of Cardiology performs some of its own radiography. (3) It is not the policy of the Department of Radiology that all radiographs be interpreted and that the fee for this interpretation be billed by the radiologist. On the contrary this is the policy of the London Health Sciences Centre, supported by the Public Hospitals Act.

The study described by Nayak and colleagues was not a prospective one, as indicated in the abstract of the article but was clearly a retrospective study as described in the Methods section. Regarding the methodology, the radiographs were not read by the orthopedic division independent of the clinical history but were read in conjunction with the clinical assessment of the patient. If the orthopedic division had (1) designed a prospective trial with blind reading of the radiographs without clinical information, as is the usual scenario in the radiology department, (2) indicated the probability of the radiograph changing the subsequent management and (3) indicated whether any of the radiographic findings actually changed the management plan, based on the clinical assessment only, the study would have been strengthened immeasurably.

The professional component of the radiologic examination does not consist solely of interpreting the results of a diagnostic procedure. It has 5 components[1] as follows:

(A) Providing clinical supervision, including approving, modifying or intervening (or both) in the performance of the procedure when appropriate, and quality control of all elements of the technical aspect of the procedures.

(B) Performance of any clinical procedure associated with a diagnostic procedure that is not separately billable (e.g., injections that are integral to the part of the study) and of any fluoroscopy.

(C) Post-procedural monitoring, where appropriate, including intervening, except when this constitutes a separable billable service.

(D) Interpreting the results of the diagnostic procedure.

(E) Providing premises for any aspect(s) of (A) and (D) that is (are) performed in a place other than that in which the procedure is performed.

We are not sure how to interpret the statement, "of the 240 primary total knee replacements, there was no discrepancy between the orthopedist's and radiologist's interpretations...." We are not in the practice of including in our consultation comment on whether the proposed operation is pertinent. Had the study been designed with the question: Based on the radiographic appearance only, is a total joint replacement recommended at this time?, we believe the study would have been strengthened and might have led to differences of opinion between the orthopedist and radiologist.

Naylor and colleagues recognized that there is a difference in opinion as to the suitability and timing of total joint replacement.[2] In this excellent review, which included one of the authors of the current article, more than 20% of the panelists reportedly were unable to agree on the appropriateness of the joint replacement classification in 30% of the scenarios included.

The individual cases cited in Nayak's article in support of their underlying hypothesis are examples of a lack of collegiality. There is no indication that any of the radiographs were reviewed by a radiologist in consultation with an orthopedic surgeon or with provision of relevant clinical findings.

With respect to economics, the authors propose that by removing the radiology consultation they would save $23 000. The average costs in our hospital for total knee and total hip replacements are $5473 and $5699 respectively. If 30% of the primary cases included in this study were inappropriate, the savings would represent ($0.3 \times 240 \times \$5473 + 0.3 \times$

184 × $5699) $708 640.80. Another option suggested for achieving significant economic saving[3] concluded that approximately $4.3 million could be saved in Ontario if primary joint replacements were devolved from tertiary care centres to community hospitals. This is obviously a significantly larger amount of money than that which would be saved by the lack of a radiologic consultation. In addition, the practice of the authors to have frequent postoperative radiographic surveillance is not supported in the literature.[4,5] It has been suggested often by the Department of Radiology that standing orders for postoperative follow-up are inappropriate for the clinical management of the patient. This has been countered by the orthopedic department, which considers these follow-up studies essential for research. Were this so, the fees for both the patient visit and the subsequent radiography should be billed to a research account and should not be submitted to the Ontario Hospital Insurance Plan for payment. Further savings could also be obtained if both knees or both hips were not routinely radiographed in follow-up studies. The savings in film alone would be approximately $6000.

We respect the experience of the senior authors (C.H.R. and R.R.B.) who have subspecialty practices of adult hip and knee reconstructive surgery. The radiology department staff also practise in a tertiary and quaternary fashion. Some of the authors of this letter have practices that are largely devoted to the interpretation of orthopedic radiology and are not representative of a general radiologist's practice in Canada. The practice in our department is that, on occasion, subspecialists in other areas do report some orthopedic films. The Methods section of Nayak's article makes no comment on whether radiographs deemed to be incorrect were interpreted by subspecialists other than orthopedic radiologists. Lastly, we believe that it is inappropriate that the references cited in the article do not appear in the peer reviewed literature but are presentations from the American Academy of Orthopaedic Surgeons annual meetings. Although the abstracts may have been peer reviewed, they do not have the same scientific merit as a peer-reviewed, published scientific paper.

Summary

We applaud the aim of Nayak and colleagues: to use our scarce economic resources as judiciously as possible. We have suggested several alternatives that would save more of our scarce health care dollars. We would be delighted to take part in a properly designed prospective randomized trial to address the issues presented in this paper.

We believe the literature would be strengthened by the publication of a collegial paper, coauthored by orthopedic and radiology departments, addressing the issue of saving health care dollars by omitting unnecessary or redundant procedures.

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A detailed review of the paper by Nayak and colleagues in the October 1996 issue (pages 393 to 396) reveals a serious lack of appropriate methodology. The study design is flawed when judged by accepted contemporary research criteria of methodology[1] for the following reasons:

The Questions

The objective stated is to "examine the necessity and cost-effectiveness of interpretation by radiologists of orthopedic radiographs obtained for patients who undergo total hip or knee replacement." However, the appropriateness of "serial radiographs" is also addressed in the context of the paper and simply answered by expressing "strong feelings." In addition, the au-