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1- Does Minimally Invasive Surgery Improve Short-term Recovery in Total Knee Arthroplasty?

Tao Cheng, Tao Liu, Guoyou Zhang, Xiaochun Peng, Xianlong Zhang.

Clin Orthop Relat Res 2009; 468:1635-48.

Abstract

BACKGROUND

Concerns have been raised regarding minimally invasive surgery (MIS) and its possible effect on postoperative functional recovery, complications, and survival rate after TKA.

QUESTIONS/PURPOSES

We specifically asked whether MIS TKA would be associated with (1) increased operative time, (2) reduced blood loss, (3) shortened hospital stay, (4) faster recovery of ROM, (5) higher knee scores, (6) inferior component positioning, and (7) increased complications.

METHODS

We performed a systematic literature search of randomized controlled trials between minimally invasive and standard approaches in TKA that compared operative time, blood loss, ROM, knee scores, component positioning, and complications. We conducted a systematic review and meta-analysis of 13 trials published from 2007 to 2009 of MIS versus standard TKA.

RESULTS

Patients in the MIS group had longer operating times (10–19 minutes). Mean Knee Society scores were better after MIS than after the standard procedure at 6 and 12 weeks postoperatively, but not after 6 months. Improvement in ROM occurred more rapidly in the MIS group 6 days after TKA but later improvements are not clearly documented. We identified no differences between minimally invasive and standard approaches regarding the short-term overall complications and alignment of femoral and tibial components. However, wound healing problems and infections occurred more frequently in the MIS group.

CONCLUSIONS

MIS leads to faster recovery than conventional surgery with similar rates of component malalignment but is associated with more frequent delayed wound healing and infections. Potential benefits in long-term survival rate and functional improvement require additional investigation.
Level of Evidence: Level II, therapeutic study (systematic review).

2- Cigarette Smoking Increases the Risk for Rotator Cuff Tears

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Clin Orthop Relat Res 2009; 468:1534-41.

Abstract

There is little available evidence regarding risk factors for rotator cuff tears. Cigarette smoking may be an important risk factor for rotator cuff disease. The purpose of this study was to determine if cigarette smoking correlates with an increased risk for rotator cuff tears in patients who present with shoulder pain. A questionnaire was administered to 586 consecutive patients 18 years of age or older who had a diagnostic shoulder ultrasound for unilateral, atraumatic shoulder pain with no history of shoulder surgery. Three hundred seventy-five patients had a rotator cuff tear and 211 patients did not. Data regarding cigarette smoking were obtained for 584 of 586 patients. A history of smoking (61.9% versus 48.3%), smoking within the last 10 years (35.2% versus 30.1%), mean duration of smoking (23.4 versus 20.2 years), mean packs per day of smoking (1.25 versus 1.10 packs per day), and mean pack-years of smoking (30.1 versus 22.0) correlated with an increased risk for rotator cuff tear. We observed a dose-dependent and time-dependent relationship between smoking and rotator cuff tears. We observed a strong association between smoking and rotator cuff disease. This may indicate smoking is an important risk factor for the development of rotator cuff tears.
Level of Evidence: Level III, prognostic study.

3- Location and Initiation of Degenerative Rotator Cuff Tears: An Analysis of Three Hundred and Sixty Shoulders.

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J Bone Joint Surg May 2010; 92A:1088-96.

Abstract

BACKGROUND

It has been theorized that degenerative rotator cuff tears most commonly involve the supraspinatus tendon, initiating at the anterior portion of the supraspinatus insertion and propagating posteriorly. The purposes of this study were to determine the most common location of degenerative rotator cuff tears and to examine tear location patterns associated with various tear sizes.

METHODS

Ultrasonograms of 360 shoulders with either a full-thickness rotator cuff tear (272) or a partial-thickness rotator cuff tear (eighty-eight) were obtained to measure the width and length of the tear and the distance from the biceps tendon to the anterior margin of the tear. Tears were grouped on the basis of their size (anteroposterior width) and extent (partial or full-thickness). Each tear was represented numerically as a column of consecutive numbers representing the tear width and distance posterior to the biceps tendon. All tears were pooled to graphically represent the width and location of the tears within groups. Frequency histograms of the pooled data were generated, and the mode was determined for each histogram representing various tear groups.

RESULTS

The mean age (and standard deviation) of the 233 subjects (360 shoulders) was 64.7 +/- 10.2 years. The mean width and length of the tears were 16.3 +/- 12.1 mm and 17.0 +/- 13.0 mm, respectively. The mean distance from the biceps tendon to the anterior tear margin was 7.8 +/- 5.7 mm (range, 0 to 26 mm). Histograms of the various tear groups invariably showed the location of 15 to 16 mm posterior to the biceps tendon to be the most commonly torn location within the posterior cuff tendons. The histograms of small tears (a width of <10 mm) and partial-thickness tears showed similar distributions of tear locations, indicating that the region approximately 15 mm posterior to the biceps tendon may be where rotator cuff tears most commonly initiate.

CONCLUSIONS

Degenerative rotator cuff tears most commonly involve a posterior location, near the junction of the supraspinatus and infraspinatus. The patterns of tear location across multiple tear sizes suggest that degenerative cuff tears may initiate in a region 13 to 17 mm posterior to the biceps tendon.

4- Hospital Cost Analysis of Adolescent Idiopathic Scoliosis Correction Surgery in 125 Consecutive Cases.

Jonathan R Kamerlink; Martin Quirno; Joshua D Auerbach; Andrew H Milby; Lynne Windsor; Laura Dean; Joseph W. Dryer; Thomas J. Errico; Baron S Lonner.

J Bone Joint Surg May 2010; 92A:1097-104.

BACKGROUND

Although achieving clinical success is the main goal in the surgical treatment of adolescent idiopathic scoliosis, it is becoming increasingly important to do so in a cost-effective manner. The goal of the present study was to determine the surgical and hospitalization costs, charges, and reimbursements for adolescent idiopathic scoliosis correction surgery at one institution.

METHODS

We performed a retrospective review of 16,536 individual costs and charges, including overall reimbursements, for 125 consecutive patients who were managed surgically for the treatment of adolescent idiopathic scoliosis by three different surgeons between 2006 and 2007. Demographic, surgical, and radiographic data were recorded for each patient. Stepwise multiple linear regression analysis was employed to assess independent correlation with total cost and charge. Nonparametric descriptive statistics were calculated for total cost with use of the Lenke curve-classification system.

RESULTS

The mean age of the patients was 15.2 years. The mean main thoracic curve measured 50[masculine ordinal indicator], and the thoracolumbar curve measured 41[masculine ordinal indicator]. The cost varied with Lenke curve type: $29,955 for type 1, $31,414 for type 2, $31,975 for type 3, $60,754 for type 4, $32,652 for type 5, and $33,416 for type 6. Independently significant increases for total cost were found in association with the number of pedicle screws placed, the total number of vertebral levels fused, and the type of surgical approach ($R2 = 0.35$, $p <= 0.03$). Independently significant increases for reimbursement were found in association with the number of pedicle screws placed and the type of surgical approach ($R2 = 0.12$, $p <= 0.02$). The hospital was reimbursed 53% of total charges and 120% of total costs. Reimbursement was highly correlated with charge ($r = 0.45$, $p < 0.001$). For rehospitalizations, the hospital was reimbursed 65% of charges and 93% of costs.

CONCLUSIONS

The largest contributors to overall cost were implants (29%), intensive care unit and inpatient room costs (22%), operating room time (9.9%), and bone grafts (6%). There were three significant independent predictors of increased total cost: the surgical approach used, the number of pedicle screws placed, and the number of vertebral levels fused. This study characterizes the relative contributions of factors that contribute to total costs, charges, and reimbursements that can, in time, identify potential areas for cost reduction or redistribution of resources in the surgical treatment of adolescent idiopathic scoliosis.

5- Role of Early Surgical Decompression of the Intradural Space After Cervical Spinal Cord Injury in an Animal Model.

Smith Jeremy; Anderson Ryan; Pham Thu; Bhatia Nitin; Steward Oswald; Gupta Ranjan.

J Bone Joint Surg May 2010; 92A:1206-14.

BACKGROUND

The role of decompressing the intradural space through a durotomy as a treatment option for acute traumatic cervical spinal cord injury has not been explored in an animal model, to our knowledge. We sought to determine the role of durotomy and duraplasty in the treatment of acute cervical spinal cord injury and its effects on inflammation, scar formation, and functional recovery.

METHODS

Seventy-two adult female Sprague-Dawley rats were assigned to three groups: contusion injury alone, contusion injury with a decompressive durotomy, and contusion injury with a decompressive durotomy followed by placement of a dural allograft. A mild (200-kdyn [2-N]) contusive injury was delivered to the exposed spinal cord at C5. The injured segment was reexposed four hours after injury, and a durotomy with decompression was performed. When a dural allograft was used it was affixed to the surrounding intact dura with use of a fibrin sealant. The Grip Strength Meter was used to assess forelimb function. Animals were killed at two and four weeks, and immunohistochemical analysis was performed to assess scar formation, inflammatory cell infiltration, and lesional volume.

RESULTS

Immunohistochemical analysis revealed increased scar formation, cavitation, and inflammatory response in the animals treated only with a decompressive durotomy. Relative to the group with a contusion injury alone, the animals treated with a durotomy followed by a dural allograft had decreased cavitation and scar formation. Lesional volume measurements showed a significantly increased cavitation size at four weeks in both the contusion-only (mean and standard deviation, 12.6 +/- 0.5 mm3) and durotomy-only (15.1 +/- 1 mm3) groups relative to the animals that had received a dural allograft following durotomy (6.8 +/- 1.4 mm3).

CONCLUSIONS

Functional recovery after acute cervical spinal cord injury was better in animals treated with decompression of the intradural space and placement of a dural allograft than it was in animals treated with decompression alone. These functional data correlated directly with histological evidence of a decrease in spinal cord cavitation, inflammation, and scar formation.

CLINICAL RELEVANCE

Surgical decompression of the intradural space followed by dural allografting after an acute traumatic cervical spinal cord injury may be an important approach to reducing the deficits resulting from the secondary injury and warrants further investigation.

6- The potential role of metal ion release as a marker of loosening in patients with total knee replacement: A COHORT STUDY.

Savarino L., Tigani D., Greco M., Baldini N., Giunti A.

J Bone Joint Surg May 2010; 92B:634-8.

We investigated the role of ion release in the assessment of fixation of the implant after total knee replacement and hypothesised that ion monitoring could be a useful parameter in the diagnosis of prosthetic loosening. We enrolled 59 patients with unilateral procedures and measured their serum aluminium, titanium, chromium and cobalt ion levels, blinded to the clinical and radiological outcome which was considered to be the reference standard. The cut-off levels for detection of the ions were obtained by measuring the levels in 41 healthy blood donors who had no implants. Based on the clinical and radiological evaluation the patients were divided into two groups with either stable (n = 24) or loosened (n = 35) implants.

A significant increase in the mean level of Cr ions was seen in the group with failed implants (p = 0.001). The diagnostic accuracy was 71% providing strong evidence of failure when the level of Cr ions exceeded the cut-off value. The possibility of distinguishing loosening from other causes of failure was demonstrated by the higher diagnostic accuracy of 83%, when considering only patients with failure attributable to loosening. Measurement of the serum level of Cr ions may be of value for detecting failure due to loosening when the diagnosis is in doubt. The other metal ions studies did not have any diagnostic value.

7- Failure of metal radial head replacement.

van Riet R., Sanchez-Sotelo J., Morrey B.

J Bone Joint Surg May 2010; 92B:661-7.

There is little information available at present regarding the mechanisms of failure of modern metallic radial head implants. Between 1998 and 2008, 44 consecutive patients (47 elbows) underwent removal of a failed metallic radial head replacement. In 13 patients (13 elbows) the initial operation had been undertaken within one week of a fracture of the radial head, at one to six weeks in seven patients (seven elbows) and more than six weeks (mean of 2.5 years (2 to 65 months)) in 22 patients (25 elbows). In the remaining two elbows the replacement was inserted for non-traumatic reasons. The most common indication for further surgery was painful loosening (31 elbows). Revision was undertaken for stiffness in 18 elbows, instability in nine, and deep infection in two. There were signs of over-lengthening of the radius in 11 elbows. Degenerative changes were found in all but one. Only three loose implants had been fixed with cement. Instability was not identified in any of the bipolar implants.

8- Kingella Kingae Osteoarticular Infections in Young Children: Clinical Features and Contribution of a New Specific Real-time PCR Assay to the Diagnosis

Dimitri Ceroni, Abdessalam Cherkaoui, Solène Ferey, André Kaelin, Jacques Schrenzel.

J Pediatr Orthop 2010; 30:301-4.

BACKGROUNG

Kingella kingae is an emerging pathogen that may be recognized as the most common bacteria responsible for osteoarticular infections (OAI) in young children. However, its diagnosis remains a challenge and thus little evoked in infants, because K. kingae is a difficult germ to isolate on solid medium, and clinical signs are often mild. The

main objective of this prospective study is to describe the clinical, biologic, and radiologic features of children with OAI caused by K. kingae. In addition, we describe the usage of a new specific real-time PCR assay in children under 4 years admitted for OAI with a probe that detects 2 independent gene targets from the K. kingae RTX toxin.

PATIENTS AND METHODS

All children less than 4 years admitted in our institution between January 2007 and November 2009 for suspected OAI were enrolled in this prospective study (43 cases).
Age, gender, clinical signs, duration of symptoms, bone or joint involved, imaging studies, and laboratory data, including bacterial investigations, full blood count, erythrocyte sedimentation rate, and serum C-reactive protein were collected for analysis.

RESULTS

Identification of the microorganism was possible for 28 cases (65.1%) yielding K. kingae in 23 cases (82.1%). Mean age of children with K. kingae OAI was 19.6 months. Less than 15% of these patients were febrile during the admission, but 46% of them presented a history of fever-peak superior to 38.51C before admission. Thirty-nine percent of the children with K. kingae OAI had normal C-reactive protein; WBC was elevated in only 2 cases, whereas 21 patients had abnormal erythrocyte sedimentation rate, and 13 abnormal platelet counts. Direct Gram staining and classical isolation methods were negative for all cases subsequently detected as K. kingae OAI by specific real-time PCR.

CONCLUSION

This study confirms that K. kingae is the major bacterial cause of OAI in children less than 4 years. The real-time PCR assay, specific to the K. kingae RTX toxin, provides interesting diagnostic performance when implemented in the routine microbiologic laboratory. Needless to say, a bigger cohort is required to adequately study this new qPCR assay, but the results so far seem promising. The most important additional finding is the mild-to-moderate clinical, radiologic, and biologic inflammatory response to K. kingae infection with the result that these children present few criteria evocative of OAI.

9- The treatment of radial neck fractures in children according to Metaizeau.

Endele Sandra Maria; Wirth Thomas; Eberhardt Oliver; Fernandez Francisco F.

J Ped Orthop May 2010; 19B:246-55.

Treatment of displaced radial neck fractures is challenging. Between 1993 and 2006, we treated 63 children using the closed intramedullary pin reduction technique according to Métaizeau in our department. In a retrospective study, associated injuries and complications were evaluated. Eighty-six percent of the patients could be contacted for follow-up questioning. Thirty-nine percent had associated injuries. All Judet II, III and most of type IV fractures could be treated with the closed method. Ninety-eight percent showed an excellent or good result according to Morrey, 90% to Métaizeau score. The closed intramedullary pin reduction technique proved to be an innovative minimal invasive technique for displaced radial neck fractures by allowing anatomical reconstruction and stable treatment.

10- Analyse du coût des reprises des prothèses totales de hanche infectées.

Klouche S.; Sariali E.; Mamoudy P.

Rev Chir Orthop Avril 2010; 96:167-75.

INTRODUCTION

La prise en charge des infections de prothèse totale de hanche (PTH) nécessite des thérapeutiques longues et coûteuses. Cependant, il existe peu d'études dans la littérature analysant le coût réel d'une reprise de PTH en fonction des étiologies, dont l'infection. Le but de cette étude rétrospective était de déterminer le coût des reprises de PTH infectées et de le comparer aux coûts des PTH de première intention et des reprises de PTH non infectées.

MATÉRIEL ET MÉTHODE

Une étude rétrospective des coûts sur l'année 2006 a été menée sur la base d'une comptabilité analytique par service selon des critères internes basés sur l'affectation à chaque service de leurs charges et recettes directes. De janvier à décembre 2006, 474 PTH primaires, 57 reprises aseptiques et 40 reprises de PTH septiques ont été réalisées. Les différents postes de dépenses lors de la prise en charge des patients ont été identifiés. Cela a inclus le bilan préopératoire, la prise en charge médicochirurgicale en cours d'hospitalisation, le séjour de soins de suite et de rééducation (SSR) et pour les reprises septiques l'antibiothérapie posthospitalisation ainsi que le coût de l'hospitalisation à domicile (HAD) si celle-ci était choisie. Nous avons utilisé les tarifs de l'Assurance maladie réunis dans la Classification commune des actes médicaux et la Nomenclature générale des actes professionnels applicables au 1er septembre 2005. Le coût de la prise en charge hospitalière comprenait les charges directes (frais de fonctionnement de l'hôpital) et les charges indirectes (plateaux médicotechniques et les charges nettes des services généraux). Le calcul des coûts de l'HAD et du séjour en SSR était basé sur le coût journalier moyen. Le coût de la PTH primaire a été utilisé comme coût de référence. Nous avons ensuite comparé nos coûts en chirurgie avec les groupes homogènes de séjour correspondants.

RÉSULTATS

La durée moyenne d'hospitalisation était de 7,5±1,8 jours pour les PTH de première intention, 8,9±2,2 jours pour les reprises aseptiques et 30,6±14,9 jours pour les reprises septiques. Le taux de transfert en SSR était de 55 % pour les PTH primaires, 77 % pour les reprises aseptiques et 65 % pour les reprises septiques. Par ailleurs, 30 %

des PTH infectées ont bénéficié d'une HAD. Le coût des reprises de PTH aseptique était 1,4 fois plus élevé que celui des PTH primaires. En cas de reprise septique le coût était 3,6 fois plus élevé que pour les PTH de première intention.

DISCUSSION

L'impact économique de l'infection des PTH est considérable. Le surcoût est essentiellement dû à une durée d'hospitalisation et de réhabilitation plus longue nécessitant des moyens humains et matériels importants.
Conclusion Le coût du traitement des infections sur PTH est élevé. Les stratégies thérapeutiques doivent donc être optimisées afin d'augmenter le taux de guérison et de minimiser les coûts totaux.