

ASSESSMENT OF FUNCTIONAL OUTCOMES OF EITHER SIMULTANEOUS OR STAGED BILATERAL TOTAL KNEE ARTHROPLASTY AT YEAR ONE

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ABSTRACT

Objective: We aimed to assess preoperative condition and postoperative 6th and 12th monthly results of simultaneous and staged total knee arthroplasty(TKA) through such scoring system (WOMAC, KSS) that evaluates functional domain of daily living activities in gonarthrosis cases.

Material and Method: 50 patients were included to the study, which were operated upon the diagnosis of bilateral gonarthrosis secondary to degenerative arthritis in our clinic in between 2005 and 2007. Group 1 consisted of staged bilateral TKA cases, applied in 3 month intervals; whereas group 2 comprised simultaneous bilateral TKA cases. Group 1 had 26 patients, including 19 women and 7 men with a mean age of 62.1 (range: 57-74); whereas group 2 had 24 patients, including 16 women and 8 men with a mean age of 64.3 (range: 58-75). Assessment of functional status of the cases was performed before and after the operation by WOMAC, and KSS scoring systems.

Results: According to WOMAC criteria, while good-excellent results were observed in 16 patients (61%) at

the end of 6 months in group 1, additional three patients reported good-excellent results after 6 months, which summed up 19 patients (73%) at the end of 1st year. In group 2, nine patients (37.5%) at month 6, and 17 patients (70.8%) at month 12 gave good-excellent results.

In terms of KSS criteria, 18 patients (69.2%) in group 1 revealed good-excellent results at 6th month, and same criteria were met by 19 patients (73%) at the end 1st year. In group 2, 12 patients (50%) at 6th month, and 17 patients (70.8%) at 12th month reported good-excellent results.

Conclusion: Bilateral total knee arthroplasty performed during the same session had greater morbidity and gave poorer functional results for first year, compared to staged bilateral TKA. Considering the age of patient, presence of concomitant diseases, and quality and expectancy of life, these findings has shown that staged total knee arthroplasty is a safer approach in cases with bilateral gonarthrosis.

Key Words: Total knee prosthesis, staged knee prosthesis, simultaneously knee prosthesis. *Nobel Med* 2011; 7(2): 26-29

EŞ ZAMANLI VE AŞAMALI BİLATERAL TOTAL DİZ ARTROPLASTİSİNDE BİR YILLIK FONKSİYONEL SONUÇ DEĞERLENDİRMESİ

ÖZET

Amaç: Gonartrozlu olgularda günlük yaşam aktivitelerini fonksiyonel olarak değerlendiren skorlama sistemlerini (WOMAC, KSS) kullanarak eş zamanlı ve aşamalı yapılan total diz artroplastilerinin ameliyat öncesi, ameliyat sonrası 6. ve 12. ay sonuçlarını değerlendirmeyi amaçladık.

Materyal ve Metod: 2005-2007 yılları arasında kliniğimizde dejeneratif artrit bağlı bilateral gonartroz tanısıyla ameliyat edilen 50 hasta çalışmaya dahil edildi.

Birinci grup üç ay ara ile uygulanan aşamalı bilateral TDA olgularından, ikinci grup ise eş zamanlı yapılan bilateral TDA olgularından oluşturuldu. Birinci grup 19'u kadın, 7'si erkek yaş ortalaması 62,1 (57-74) toplam 26 kişiden oluşmaktaydı.

İkinci grupta yaş ortalaması 64,3 (58-75), 16'sı kadın, 8'i erkek toplam 24 kişi mevcuttu. Olguların fonksi-

yonel durumları ameliyat öncesi ve sonrasında WOMAC25 ve KSS9,10 skorlamaları ile değerlendirildi.

Bulgular: WOMAC kriterlerine göre birinci grupta 6.ayın sonunda 16 hastada (%61,5) iyi-mükemmel sonuç gözlenirken, birinci yıl sonunda 19 hastada (%73) iyi-mükemmel sonuç bildirildi. İkinci grupta 6.ayın sonunda 9 hasta (%37,5), bir yılın sonunda 17 hasta (%70,8) iyi-mükemmel sonuç bildirmiştir. KSS kriterlerine göre birinci grupta 6.ayın sonunda 18 hastada (%69,2) iyi-mükemmel sonuç gözlenirken, birinci yıl sonunda 19 hastada (%73) iyi-mükemmel sonuç bildirildi. İkinci grupta 6.ayın sonunda 12 hasta (%50), bir yılın sonunda 17 hasta (%70,8) iyi-mükemmel sonuç bildirmiştir.

Sonuç: Bu çalışmaya göre aynı seansta yapılan bilateral total diz artroplastisinin morbiditesi daha yüksek olup, fonksiyonel sonuçları ilk yıl için daha kötüdür. Hasta yaşı, eşlik eden hastalıkların varlığı, yaşam kalitesi ve beklentisi göz önüne alınarak bilateral gonartrozlu olgularda aşamalı bilateral total diz artroplastisinin daha güvenli bir yöntem olduğunu düşünmekteyiz.

Anahtar Kelimeler: Total diz protezi, aşamalı diz protezi, eş zamanlı diz protezi, *Nobel Med 2011; 7(2): 26-29*

INTRODUCTION

Gonarthrosis, usually affecting both knees, is primarily seen in advanced rheumatoid arthritis and osteoarthritis cases^{1,2}. The gradual increase in mean life expectancy uncovers the negative impact of this condition on the quality of life, for which a variety of therapeutic approaches is already present. One of these treatment options is the total knee arthroplasty (TKA), which is used to restore the function and relieve pain in gonarthrosis patients¹. Generally both knees should undergo TKA in patients with bilateral gonarthrosis applied either in a simultaneous or staged manner²⁻⁵. Searches in the literature demonstrated diverse studies reporting better^{2,5,6}, worse^{3,8}, or similar^{1,7} results of simultaneous intervention compared to staged option in terms of morbidity.

In our study, we aimed to assess preoperative condition and postoperative 6th and 12th monthly results of simultaneous and staged TKA through such scoring system (WOMAC²⁵, KSS^{9,10}) that evaluates functional domain of daily living activities in gonarthrosis cases.

MATERIAL and METHOD

50 patients were included to the study, which were operated upon the diagnosis of bilateral gonarthrosis

secondary to degenerative arthritis in our clinic in 2005-2007. Group 1 consisted of staged bilateral TKA cases, applied in 3 month intervals; whereas group 2 comprised of simultaneous bilateral TKA cases. Group 1 had 26 patients, including 19 women and 7 men with a mean age of 62.1 (range: 57-74); whereas group 2 had 24 patients, including 16 women and 8 men with a mean age of 64.3 (range: 58-75). Assessment of functional status of the cases was performed before and after the operation by WOMAC, and KSS scoring systems. Anterior midline incision was applied to all knees under pneumatic tourniquet. Patella was tilted laterally and the joint was exposed. Appropriate tibial and femoral components were placed, which was followed by lateral retinacular release in 11 patients with patellofemoral incongruence (five of group 1 and six of group 2). Posterior cruciate ligament was preserved in all patients. Patellar component was not used in any cases. Surgery was terminated with aspirative drain, which was removed on postoperative day 2, when full weight-bearing walking and active flexion-extension movements were initiated.

Antibiotic prophylaxis comprised of cefazoline 1 g I.V. administered before an hour of surgery and subsequent four doses were applied at 6 hour intervals within first 24 hours. Low molecular weighted heparin 0.4 cc/day S.C. was administered during first three weeks. →

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RESULTS

In preoperative period, all patients of both groups elicited poor results (<60 points) upon daily activity assessment according to WOMAC and KSS criteria. While mean flexion-extension range of motion was 70° before surgery, a mean of 107° (range:90-120) range of motion was achieved at 3rd week in the postoperative stage. Loss of extension was noted to be as 8° (range: 0-15). In our study, the need for blood and blood products in group 1 was 1.8 units in average (range: 1-4), which was 2.3 units (range: 1-5) in group 2. There was no significant difference between two groups in terms of need for blood and blood products. In group 2 consisting of simultaneous bilateral TKA cases, four patients developed sinus tachycardia and stable angina pectoris was detected in another two patients within first two days of the surgery, all of whose therapeutic management was undertaken by cardiology department. Further two patients in group 2 on postoperative day 7 developed superficial soft tissue infection, which was intervened by appropriate antibiotherapy.

In group 1, postoperative mean WOMAC was found to be 73.08 at month 6, and 77.87 at month 12; which was detected to be 63.6 at month 6 and 75.92 at month 12 in group 2. While group 1 showed a mean postoperative KSS of 70.69 at month 6 and 79.26 at month 12, group 2 reported a mean KSS of 61.75 and 77.85 at the 6th and 12th month of postoperative period, respectively.

According to WOMAC criteria, while good-excellent results were observed in 16 patients (61%) at the end of 6 months in group 1, additional three patients reported good-excellent results after 6 months, which summed up 19 patients (73%) at the end of 1st year. In group 2, nine patients (37.5%) at month 6, and 17 patients (70.8%) at month 12 gave good-excellent results.

In terms of KSS criteria, 18 patients (69.2%) in group 1 revealed good-excellent results at 6th month, and same criteria were met by 19 patients (73%) at the end 1st year. In group 2, 12 patients (50%) at 6th month, and 17 patients (70.8%) at 12th month reported good-excellent results.

DISCUSSION

A successful total knee arthroplasty in the management of a gonarthrosis case should relieve pain, correct the deformity, allow for sufficient range of motion, and provide with stability and function in daily activities¹¹. There are various studies indicating advantages and disadvantages of either

simultaneous or staged intervention of bilateral total knee arthroplasty on each other^{5,11-14}. While Dennis¹⁵ et al. suggested simultaneous arthroplasty, Liu et al¹³. reported that staged procedure shortened the time for hospitalization and returning to full functioning. Hersekli et al¹⁷. suggested that simultaneous TKA was better with respect to cost and efficacy, and more advantageous in terms of such variables as perioperative complication, amount of blood loss, and hospitalization time.

Regarding the complication rates, no significant difference was detected between simultaneous and staged TKA comparisons performed by Morrey et al¹⁹. Janchievich et al¹⁵. reported that loss of blood and consequent need for transfusion was greater in simultaneous TKA compared to staged TKA. While similar results were demonstrated in the study by Mc Laughlin et al⁶., the comparison of simultaneous and staged bilateral TKA cases by Brotherton et al⁷. reported the need for blood and blood products during or after the surgery to be similar. In patients undergoing simultaneous bilateral TKA, it was reported that relative thrombocytopenia²⁰ may develop on postoperative day 2, and that amount and volume of embolus was greater according to transesophageal echocardiographic studies²², and that cardiovascular complications^{21,23} were more frequently observed, and mortality rate was greater²⁴.

WOMAC and KSS, daily activity scoring criteria of functional assessment, were applied to all patients in the preoperative period and at the 6th and 12th month of postoperative period. Preoperative functional assessment elicited poor results (<60 points) similar in both groups. Good-excellent results at 6 month of postoperative period were achieved in 18 patients (69.2%) of group 1 comprising of staged bilateral TKA cases, and in 12 patients (50%) of group 2 comprising of simultaneous bilateral TKA cases. In fact, good-excellent results consisting of 17 patients (70.8%) was reported at the end of 12th month in cases with simultaneous bilateral knee arthroplasty, implying a functional improvement. It was observed that functional results of simultaneous bilateral TKA intervention approximate the results of staged bilateral TKA merely at the end 1st year.

In conclusion, bilateral total knee arthroplasty performed during the same session had greater morbidity and gave poorer functional results for first year, compared to staged bilateral TKA. Considering the age of patient, presence of concomitant diseases, and quality and expectancy of life, these findings has shown that staged total knee arthroplasty is a safer approach in cases with bilateral gonarthrosis.



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