

Total Knee Replacement Following Coronary Artery Bypass Surgery

A Lakdawala, J Ireland, J Hogan

Citation

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Abstract

Four patients, following successful earlier coronary artery bypass surgery underwent successful total knee replacement. The average follow-up of these patients is 47.5 months. Three of the patients had bilateral knee replacements and there were no significant complications.

INTRODUCTION

Patients following coronary artery bypass surgery (CABS) may have compromised cardiac function. These patients are categorised as high-risk, according to the ASA-grading [1]. We report 4 such patients with successful total knee replacements.

CASE REPORTS

The clinical details of all four patients are summarised in table 1.

Figure 1

Table 1: Summary Of Cases

No.	Patient age at the time of Surgery (yrs)	Sex	Time interval between CABS & TKR (yrs)	Indication for Total Knee Replacement	Total Knee Replacement	Anaesthetic	*ASA Grade	Co-morbidity	Pre-op systemic complications	Length of Hospital stay	Follow-up (months)	Outcome
1	74	M	8	OA	Bilateral	GA	ASA-3	Obesity	None	15 days	72	Good
2	74	M	10	OA	Bilateral	GA	ASA-3	TIA*, BPH*	None	14 days	48	Good
3	80	M	15	OA	Bilateral staged	GA	ASA-2	None	Non-specific right-sided chest pain. 25 days post-op	18 days	10	Good
4	73	M	4	OA	Unilateral	GA	ASA-3	HT*, High Cholesterol	None	15 days	80	Good

*ASA – American Society of Anesthesiologists Risk Assessment Grading System

*HT – Hypertension, *BPH – Benign Prostate Hypertrophy, * TIA – Transient Ischaemic Attacks

Two patients underwent bilateral total knee replacements under one anaesthetic. One had staged bilateral knee replacements, 6 days apart and one had a unilateral knee replacement. All four patients underwent medical evaluation by a cardiologist. The decision to proceed with total knee replacement was taken in conjunction with the cardiologist and anaesthetist. The average follow-up of these patients till date is 47.5 months.

Figure 2

Figure 1a: Pre operative radiograph of both knees

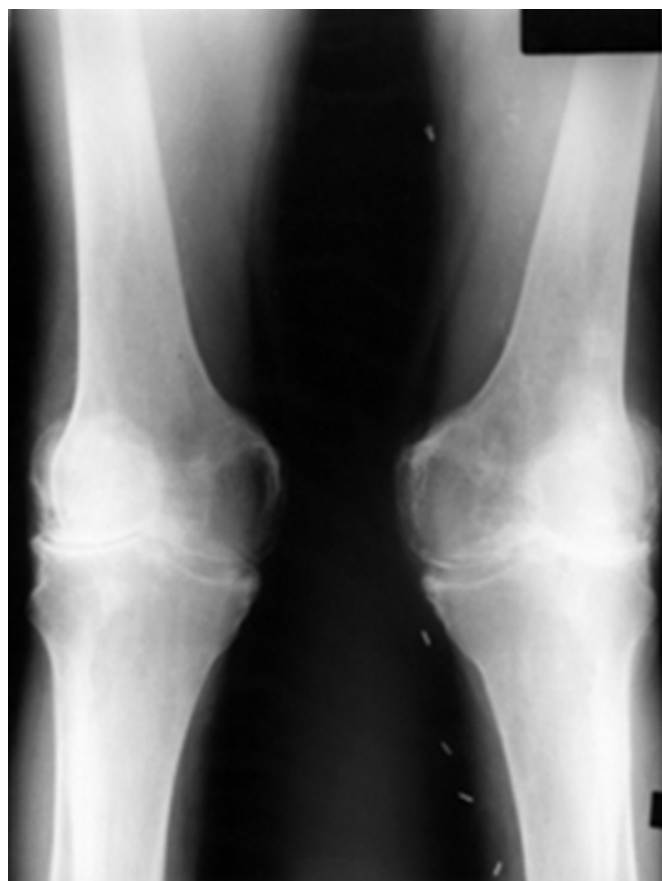
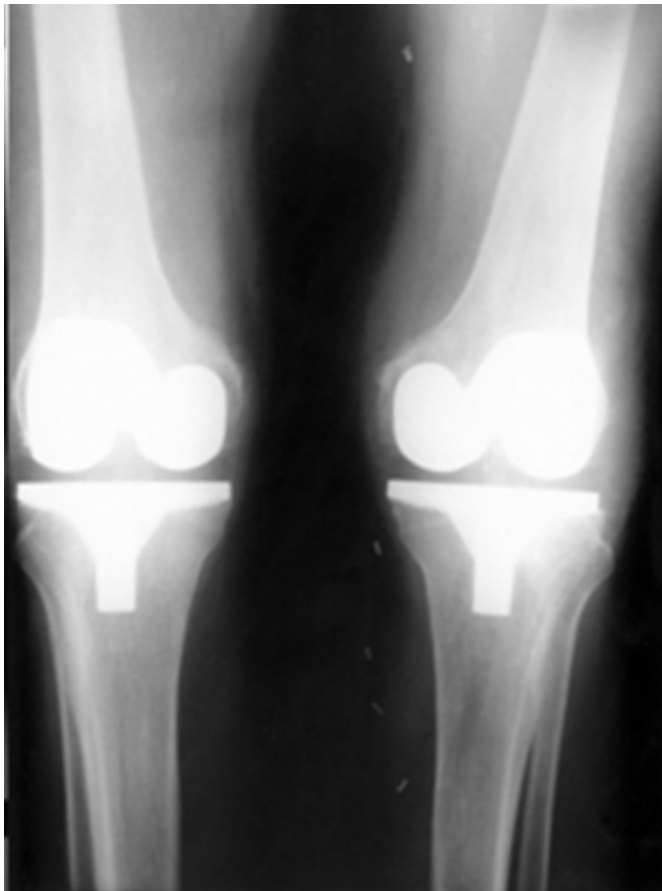


Figure 3

Figure 1b: Postoperative radiograph of both knees



DISCUSSION

Patients following CABS are usually considered high-risk for major surgery. Myocardial infarction, pulmonary embolism and deep vein thrombosis are the most commonly occurring complications [2,3]. Mantilla [2] reviewed 10,244 patients who underwent primary hip and knee replacement. The overall cardio-pulmonary complication rate in that series was 2.2%. The American College of Cardiology / American Heart Association Task Force [4] suggest that the risk of overall cardiac morbidity in the population undergoing orthopaedic surgery is intermediate (1-5%). Advanced age, pre-existing cardio-pulmonary disease and simultaneous bilateral joint replacements are associated with increased mortality after total knee arthroplasty [2,3].

Wasielewski [5] found that the outcome of total knee replacement was compromised by associated medical disability. Hosick [6] concluded that many medical problems did not affect the outcome of arthroplasty and Pritchard [7] reported good results in elderly patients. Laskin [8] has reported that patients over the age of 85 can tolerate knee replacement well. The mortality and functional results in his

group were almost equivalent to those in much younger patients, but with slightly higher level of perioperative morbidity.

The safety of bilateral knee replacement is also debated. Adili [9] has reported successful outcome following sequential bilateral knee replacement under one anaesthetic in patients older than 75. Lynch [10] suggested the staging of bilateral knee replacements in elderly patients but Lombardi [11] and Jankiewicz [12] considered bilateral sequential knee replacements to be advantageous and preferred by the patients to the staged procedures.

Reis [13,14] evaluating cardiovascular fitness after hip and knee replacement, found that the post-operative resumption of physical activity was associated with increased fitness, and that patients following joint replacement were fitter than the patients with arthritic joints who were treated non-operatively.

The major purpose of total knee arthroplasty is improvement in the patients' quality of life. Successful total knee replacement enables increased levels of exercise and this can be beneficial to patients with anxiety, depression, obesity, high blood pressure, coronary artery disease, diabetes mellitus, osteoporosis and low back pain [15].

This report is of four relatively high-risk patients who underwent total knee replacement without significant complications. Liaison between the surgeon, anaesthetist and cardiologist is recommended.

CORRESPONDENCE TO

Mr. Ayaz Lakdawala MRCS
123 – Arnold Road
Shirley, SOLIHULL – B90 3JT
Tel: 00447962017751 Fax: 0044 208 559 1161

References

1. Tinker JH, Roberts SL. Anaesthesia risk. In Miller RD (ed). Anaesthesia. New York, Churchill Livingstone 1986, 365-367
2. Ouchterlony J, Arvidsson S, Sjostedt L, Svardsudd K. Preoperative and immediate postoperative adverse events in patients undergoing elective general and orthopaedic surgery. The Gothenburg study of perioperative risk (PROPER) II. Acta Anaesthesiol Scand 1995; 39: 643-652
3. Mantilla CB, Horlocker TT, Schroeder DR et al. Frequency of myocardial infarction, pulmonary embolism, deep vein thrombosis and death following primary hip or knee arthroplasty. Anaesthesiology 2002 May; 96(5): 1140-56
4. Eagle KA, Brundage BH, Chaitman BR et al. Guidelines for perioperative cardiovascular evaluation for non-cardiac surgery. Report of the American College of Cardiology /

- American Heart Association Task Force on practice guidelines. Committee on perioperative cardiovascular evaluation for noncardiac surgery. *Circulation* 1996; 93: 1278 - 317
5. Wasielewski RC, Weed H, Prezioso C et al. Patient comorbidity - relationship to outcomes of total knee arthroplasty. *Clin Orthop*. 1998 Nov;(356): 85-92
6. Hosick WB, Lotke PA, Baldwin. Total knee arthroplasty in patients 80 years of age and older. *Clin Orthop* 1994; 248: 77-80
7. Pritchard RW. Total knee replacement in the elderly. *J Maine Med Assoc* 71: 1980, 378-379
8. Laskin RS. Total knee replacement in patients older than 85 years. *Clin Orthop*. 1999 Oct; 367: 43-49
9. Adili A, Bhandari M, Petruccelli D, De Beer J. Sequential bilateral total knee arthroplasty under 1 anaesthetic in patients > or = 75 years old- complications and functional outcomes. *J Arthroplasty* 2001 Apr; 16 (3): 271-278
10. Lynch NM, Trousdale RT, Ilstrup DM. Complications after concomitant bilateral total knee arthroplasty in elderly patients. *Mayo Clin Proc*, 1997; 9: 799 - 805
11. Lombardi Jr AV, Mallory TH, Eberle RW. Simultaneous bilateral total knee arthroplasty - the patient's perspective. *Orthop Trans*, 1994; 17:1158
12. Jankiewicz JJ, Sculco TP, Ranawat CS. One stage versus 2-stage bilateral total knee arthroplasty. *Clin Orthop*, 1994; 309:94-101
13. Ries MD, Philbin EF, Groff GD. Improvement in cardiovascular fitness after total knee arthroplasty. *J Bone Joint Surg [Am]* 1996; 78A: 1696-1701
14. Ries MD, Philbin EF, Groff GD. Effect of total hip arthroplasty on cardiovascular fitness. *J Arthroplasty*, 1997; 12 (1): 84-90
15. American College of sports medicine physicians statement. The recommended quantity and quality of exercise for developing and maintaining cardiovascular fitness in healthy adults. *Med Sci Sports Exerc*, 1990; 22: 265-274

Author Information

Ayaz Lakdawala, MRCS(Eng)

Research Registrar, Holly House Hospital

John Ireland, FRCS

Consultant Orthopaedic Surgeon, Holly House Hospital

John Hogan, MD, FRCP

Consultant Cardiologist, Holly House Hospital