



International Journal of Orthopaedics Sciences

ISSN: 2395-1958
IJOS 2017; 3(2): 449-451
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www.orthopaper.com
Received: 08-02-2017
Accepted: 09-03-2017

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Girdlestone resection arthroplasty – A limb salvage procedure after failed hip surgery in a rural setup

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DOI: <http://dx.doi.org/10.22271/ortho.2017.v3.i2d.38>

Abstract

Background: Excision arthroplasty of the hip was first documented in surgical practice over a century ago. However, it was made popular in 1943 by Gathorne Girdlestone who used the technique for the treatment for septic arthritis of the hip.¹ Thus his name has been synonymous with the procedure, which is currently used to address problems arising from failed hip surgery including peri-prosthetic infections or recurrently dislocating prostheses.

Materials & Methods: Between 2001 and 2016, the case notes and theatre charts of 57 patients who had undergone Girdle stone resection arthroplasty were reviewed retrospectively. The indications were sepsis after a hip arthroplasty in 35 cases, aseptic loosening of the prosthesis in 5, recurrent dislocation of a hip arthroplasty in 2 and failed internal fixation of a femoral neck fracture in 15. The final subjective outcome was evaluated by questionnaire performed by a single assessor. Subjective assessment was recorded in terms of pain, leg length discrepancy, functional activities, infection control, use of a walking aid, walking ability and overall satisfaction status according to Harris Hip Scoring Questionnaire.

Results: After recovery from operative intervention 33% of patients experienced mild pain to no pain at all and were considered to have adequate pain control.

Finally, 79.16% were happy with the outcome, 12.5% of patients were unhappy with the long-term result, and 8.33% were indifferent.

Conclusions: This study found that the Girdlestone resection arthroplasty was a viable option to salvage irreversibly failed operated hip fractures in medically and economically suboptimal patients in rural setup.

Keywords: Girdlestone, arthroplasty, hip fractures

1. Introduction

Excision arthroplasty of the hip was first documented in surgical practice over a century ago. However, it was made popular in 1943 by Gathorne Girdlestone who used the technique for the treatment for septic arthritis of the hip^[1]. Thus his name has been synonymous with the procedure, which is currently used to address problems arising from failed hip surgery including peri-prosthetic infections or recurrently dislocating prostheses. With antimicrobial therapy and one and two stage revision procedures becoming increasingly effective, definitive excision arthroplasty has become a salvage operation, reserved for those with significant comorbidities or for situations in which revisions and washouts have repeatedly failed. Although the procedure is a well-documented surgical intervention, there is little current evidence identifying the patient groups involved or the functional outcome following the procedure. This study aims to update current literature, to assess the patient group undergoing the procedure and to investigate the functional outcome of patients following this procedure.

2. Methods

Between 2001 and 2016, the case notes and theatre charts of 57 patients who had undergone Girdle stone resection arthroplasty were reviewed retrospectively. The indications were sepsis after a hip arthroplasty in 35 cases, aseptic loosening of the prosthesis in 5, recurrent dislocation of a hip arthroplasty in 2 and failed internal fixation of a femoral neck fracture in 15. The final subjective outcome was evaluated by questionnaire performed by a single assessor. Subjective assessment was recorded in terms of pain, leg length discrepancy, functional activities, infection control, use of a walking aid, walking ability and overall satisfaction status according to Harris Hip Scoring Questionnaire.

Follow-up time from time of operation ranged from 1 year to 7 years with an average time to follow-up of 22 months. Patients were contacted via their personal visit and asked to complete the functional component of the Harris Hip Scoring Questionnaire. Patients were also asked to comment on their overall satisfaction following the procedure. For patients with dementia for whom a relative or caregiver could be contacted who was aware of the patients' functional status before and after the operation, the relative or caregiver was asked to complete the functional aspect of the questionnaire on the patients' behalf.

Data was subsequently collated and analyzed in Excel.

3. Results

Total 57 cases identified 22 patients had died at the time of follow-up suggesting an overall mortality of 38.60 %. Out of the 34 sets of notes obtained there were 11 patients which were excluded due to illness of the patient and unable to answer. Finally, there were 24 patients out of them 16 were females and 8 were males. Mean age of patient was 77.29 years (SD+-6.94, Min-Max 60 to 89) at the time of operation.

The most common indication was infected prosthesis which made up over 61.40% of cases. Failed Internal fixation was the next frequent making up 31.92% of cases. (Table.1)

Table 1: Indication of Girdle Stone Arthroplasty

Reason	Number Of Patients
Sepsis	35
Loosening Of Prosthesis	5
Recurrent Dislocation	2
Failed Internal Fixation	15

Thirty patients had clear documentation of co-morbidities at the time of operative intervention. Other patients diagnosed co-morbidities at the time of operative intervention. Most common co morbidities were COPD, past myocardial infarctions, congestive cardiac failure, Dementia.

All the patients were not affordable the cost of implant for revision surgery.

Functional analysis was conducted on patients 24 patient according to Harris Hip Scores and result is shown in Table. 2.

Table 2: Details of functional outcome in patients following Girdle stone arthroplasty

No.	Age	Gender	Indication	Pain	Infection	Walking Aids	Satisfaction	Follow up(Month)
1	60	F	Sepsis	None	Controlled	1 Stick	Satisfied	28
2	78	M	Dislocation	Mild		1 Stick	Satisfied	22
3	82	F	Failed Fixation	None		Zimmer Frame	Satisfied	10
4	85	M	Sepsis	None	Controlled	Zimmer Frame	Satisfied	16
5	67	M	Sepsis	Mild	Controlled	1 Stick	Satisfied	25
6	69	F	Dislocation	None		1 Stick	Very Satisfied	22
7	79	F	Sepsis	Mild	Controlled	Zimmer Frame	Satisfied	20
8	78	F	Failed Fixation	None		Zimmer Frame	Satisfied	18
9	80	M	Sepsis	None	Controlled	Zimmer Frame	Satisfied	14
10	75	M	Sepsis	None	Controlled	1 Stick	Very Satisfied	12
11	89	F	Sepsis	None	Controlled	Zimmer Frame	Satisfied	9
12	84	F	Loosening Of Prosthesis	Mild		Zimmer Frame	Neither Satisfied Nor Dissatisfied	20
13	78	M	Failed Fixation	Mild		1 Stick	Satisfied	22
14	74	F	Failed Fixation	None		1 Stick	Satisfied	24
15	67	F	Sepsis	Moderate	Controlled	1 Stick	Not Satisfied	26
16	77	F	Failed Fixation	None		1 Stick	Satisfied	21
17	70	M	Sepsis	Mild	Controlled	1 Stick	Satisfied	18
18	81	F	Failed Fixation	None		Zimmer Frame	Not Satisfied	10
19	83	F	Loosening Of Prosthesis	None		Zimmer Frame	Neither Satisfied Nor Dissatisfied	14
20	76	F	Sepsis	Mild	Controlled	1 Stick	Satisfied	16
21	74	F	Sepsis	Mild	Controlled	1 Stick	Satisfied	20
22	82	F	Sepsis	None	Controlled	1 Stick	Satisfied	8
23	80	F	Sepsis	Mild	Controlled	Zimmer Frame	Satisfied	11
24	87	M	Sepsis	None	Controlled	Zimmer Frame	Not Satisfied	15

4. Discussion

Over the last few decades' revision surgery has become the surgical option of choice for patients suffering from failed prostheses. Girdlestones procedure is now used exclusively for high risk surgical patients with poor post-operative prognosis [2]. As demonstrated in this study patients who are offered Girdlestones procedure today are elderly with an average age of 78 years. This is in line with average ages found in studies from Sharma *et al.* in both 2005 and 2006 [3, 4].

The limp and support while walking consistently scored poorly. All mobile patients required walking aids when mobilising independently. Such high dependency on walking aids are not unique to this study and is thought to be primarily due to the leg length discrepancy and muscle weakness

inherent to the operative technique [2]. Dependence on walking aids is a necessary consequence rather than a specific reflection of poor outcome.

The average number of co-morbidities noted from this study is 2.5. With increasingly frail patient groups associated with more recent studies one may expect increasingly poor post-operative outcomes. Indeed, mortality rates seem significantly higher in later studies. Literature quotes figures between 58% and 68% not dissimilar from the figure of 38.60% noted in this study [3, 4].

Despite the apparent relationship between mortality rates, functional outcome is not so closely related. Marchetti *et al.* demonstrated an association between increasing age and improved functional outcomes [5]. However this may simply be a reflection of lower expectations in more elderly co-

morbid patients as throughout the literature there have been mixed reports on functional outcomes with no obvious correlation between ages or pre-morbid state and functional outcomes [1, 6-14]. This study would suggest a high level of satisfaction in those undergoing the procedure.

After recovery from operative intervention 33% of patients experienced mild pain to no pain at all and were considered to have adequate pain control. Past literature suggests that adequate pain control is obtained in anything from 35% to 100% of patients making our findings consistent with previous studies [1, 4].

Finally, 79.16% were happy with the outcome, 12.5% of patients were unhappy with the long-term result, and 8.33% were indifferent. These findings are similar to those published by Sharma H, Kakar R. *et al.* in 2006 [4].

5. Conclusion

This study found that the Girdlestone resection arthroplasty was a viable option to salvage irreversibly failed operated hip fractures in medically and economically suboptimal patients in rural setup.

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