ORIGINAL ARTICLE

EVALUATION OF THE FUNCTION AND QUALITY OF LIFE OF PATIENTS SUBMITTED TO GIRDLESTONE'S RESECTION ARTHROPLASTY

Priscila Akemi Yamamoto[1], Gisele Landim Lahoz[2], Edmilson Takehiro Takata[3], Danilo Masiero[4], Therezinha Rosane Chamlian[5]

SUMMARY

Objectives: To evaluate function and quality of life of patients submitted to Girdlestone's arthroplasty, and to compare outcomes between unilateral Girdlestone's group with the group with contralateral total hip prosthesis. Methods: Cross-sectional study where 9 patients were evaluated with unilateral Girdlestone's and 3 with Girdlestone's in one hip and contralateral total hip prosthesis. The evaluation consisted in filling in a generic questionnaire on quality of life "SF-36" and a specific questionnaire for hip function "Harris Hip Score" (HHS). The comparison between groups was made by using the Student's t-test and the Fisher's test. Results: The patients of the unilateral Girdlestone's group presented a higher number of SF-36 domains classified as high, although 77.8% of these showed poor results on the HHS. All patients had a leg-length discrepancy and positive Trendelenburg's test, which led to limping gait in 11 of 12 patients evaluated. Of these, only 6 underwent physiotherapy after surgery. Conclusion: Girdlestone's postoperative quality of life and function in a Brazilian population still requires further studies, because these outcomes are indicative of study variables' behavior and cannot be regarded as definite.

Keywords: *Quality of life; Arthroplasty; Method; Hip.*

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INTRODUCTION

Girdlestone's arthroplasty was first performed and documented by Schmalz (1817) and White (1821) to treat children with coxofemoral joint tuberculosis[1-3]. In 1928, Girdlestone briefly described this procedure, using it for treating hip tuberculosis[4] and later, in 1943, Girdlestone globally disseminated this technique as a solution for treating septic and tuberculous hip pathologies[2, 4-6]. In 1960, with the development of hip replacement arthroplasty, resection arthroplasties were progressively left aside[3]. Today, the Girdlestone's resection arthroplasty (GRA) is employed as a salvage procedure in cases of failure and/ or infection of total hip prostheses (THP)[1-3,5,7-18], serious hip sepsis[9,17,19] and previous surgical failures, in which the bones cannot afford to undergo a surgical procedure preserving joint functional anatomy[2,6,7,16,20]. Currently, the term "Girdlestone Hip" is applied to the condition in which patients who had their prostheses removed are found[21].

The main objectives of this procedure are to promote pain relief[7,8,13,22,23], improve patient's function[7,8,23], eradicate infection (when present)[22,23] and promote satisfaction[23]. The advantages of this technique include the following: it can be used in cases where other kinds of arthroplasties are contraindicated; it provides long-term results, and; it may subsequently be converted into HTP[3,24]. However, some authors state that the Girdlestone's surgery is a functionally poor salvage technique[1,8,12,14,15,17,18,21,22, 25-27], because it changes patients' lifestyles[15], leads to stance changes[18], to early fatigue due to the high levels of energy required for ambulation[10,11,15,18], postoperative joint instability[3,4,11,14,15,18,28], gait disorder with the presence of a positive Trendelenburg's sign[1-17, 19-22,24,25, 28-33], the need of an external support to ambulate[1-20,22,24,25,28-33] and limbs discrepancy[1-20, 22, 24, 25, 27-33], constituting a serious surgical disadvantage[11,15].

Bittar and Petty[8], Morscher[18], Clegg[27], Petty and Goldsmith[29] reviewed infected hip total arthroplasties treated by GRA and concluded that although infection is eradicated and pain is relieved, patients ultimately get functionally disabled. Furthermore, McElwaine and Colville[15] state that, although achieving some limited and poor functional results, GRA cannot be regarded as a total failure if pain relief - key objective of the method - is achieved.

At University of Florida, 21 patients were submitted to GRA after receiving a diagnosis of infected THP, and were reviewed after the procedure. These patients' outcomes suggested that resection arthroplasty for infected HTP provides poor functional results[8]. De Laat[6] concluded that arthroplasty as per Girdlestone, in some cases, constitutes the only solution for assuring a good quality of life for patients with hip joint pathologies; however, McElwaine and Colville[15]

Study conducted at the Adult Hip Pathologies Group Outpatient Facility of Hospital São Paulo, Discipline of Orthopaedics, Department of Orthopaedics and Traumatology - UNIFESP – EPM.

Correspondences to: Rua Belo Horizonte, 1445 / Apto. 1802 – Cep.: 86020-060. Centro, Londrina – PR – E-mail: priscila_yamamoto@hotmail.com

1. Student of Specialization Course in Hospital and Outpatient Motor Physical Therapy applied to Orthopaedics and Traumatology, Department of Orthopaedics and Traumatology, Paulista Medical School, Federal University of São Paulo (DOT – EPM / UNIFESP)
2. Master in Sciences by UNIFESP, Coordinator of the Specialization Course in Hospital and Outpatient Motor Physical Therapy applied to Orthopaedics and Traumatology - Hospital Department - DOT – EPM / UNIFESP
3. Master, Head of the Adult Hip Pathologies Group, DOT – EPM / UNIFESP
4. Full Professor, Associate Professor, Vice-Head of the Discipline of Physiatrics, DOT – EPM / UNIFESP.
5. PhD, Associate Professor, Head of the Discipline of Physiatrics, DOT – EPM / UNIFESP

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state that one of the major disadvantages of this procedure is the change imposed to these patients' lifestyles.
The objective of this study is to assess function and quality of life of patients following Girdlestone's resection arthroplasty (GRA) and compare the results between the unilateral Girdlestone group with the group with contralateral HTP.

MATERIALS AND METHODS

The study was conducted at the Adult Hip Pathologies Group Outpatient Facility of Hospital São Paulo, Discipline of Orthopaedics, Department of Orthopaedics and Traumatology - UNIFESP – EPM, from May to December 2005, where 3 subjects diagnosed with GRA in one hip and contralateral hip total prosthesis and 9 with unilateral GRA were assessed. All the subjects enrolled in the study were informed about the nature of the research and their consents were recorded on a consent term. The average age of patients was 58.67 years, ranging from 27 to 89 years.
The inclusion criterion was a diagnosis of Girdlestone's resection arthroplasty. Patients with primary GRA and presenting cognitive deficits were excluded from the study.
At baseline, we counted on 37 patients, but 1 passed out and 8 could not be found, 5 were living in other cities, 9 were unwilling to take part of the study, and 2 patients else were excluded due to stroke resulting in total hearing loss (1 case) and to prosthesis replacement (1 case). Of the 12 subjects left, 8 were men and 4 were women. Regarding the involved side, 6 individuals were submitted to GRA on the right hip and the other 6 on the left side.
All subjects were submitted to assessment, which constituted of applying a generic questionnaire on quality of life, the SF-36, and a functional questionnaire specific to hip joint – the "Harris Hip Score". The SF - 36 is a multidimensional questionnaire comprised of 36 items, comprehending 8 domains: functional capacity, physical aspects, pain, overall health status, vitality, social and emotional aspects, mental health, as well as a question measuring current health status compared to the previous year's. This questionnaire assess both negative (pain) and positive (well-being and vitality) aspects[34] The functional questionnaire "Harris Hip Score" is constituted of 4 items: pain at the involved joint, presence or absence of deformity, and the range of motion of this joint. Function is assessed by questioning patients' daily life activities and gait, which includes the presence of limping, need of external support, and maximum walk distance[35].
Groups' comparison for SF-36 scores was made by using the Student's t test, and the comparison with categorical variables was made by using the Fisher's exact test.

RESULTS

By analyzing each individual score in this very questionnaire, we can see that, in unilateral Girdlestone group, they were shown to be good for pain, emotional and social aspects, overall health status (OHS) and mental health. A moderate score was given to vitality criterion, and low scores have been given to functional capacity and physical aspects. In the Girdlestone with contralateral HTP group, good scores were only seen for 3 items: pain, emotional aspects, and mental health (Table 1).
Chart 1 gives us the descriptive level of each of the eight domains of the SF-36 when comparing the mean scores achieved between both groups.
We found that in the end result of the HHS functional questionnaire, only one patient achieved a score regarded as good, and that patient belonged to the GRA with contralateral HTP group, while the remainder ranged from moderate to poor. About 77.8% of the individuals of unilateral Girdlestone group showed poor functional outcomes.
As previously mentioned in the methods, one of the requirements of the HHS to assess patients' function is gait. Of the 12 studied patients, 11 showed limping gait of mild to severe magnitude for the 1st group, and mild to moderate for the 2nd group. All subjects of the group with contralateral HTP required external support to ambulate. In the group with unilateral Girdlestone, only one patient was able to ambulate without support, but showing severe limping. Also in that group, 1 patient became wheelchair-

Group	Subject	Functional Capacity	Physical Aspects	Emotional Aspects	Social Aspects	Pain	Vitality	OHS	Mental Health
Unilateral Girdlestone	1	45	100	100	100	51	50	92	92
	2	60	100	100	88	100	65	87	60
	3	60	0	100	100	100	70	87	100
	4	50	0	0	63	32	30	87	56
	5	0	0	100	100	72	45	62	72
	6	0	0	100	100	52	40	82	60
	7	55	0	0	100	100	75	75	72
	8	15	100	100	100	100	70	50	68
	9	30	25	33	50	41	60	57	56
	Average	35.0	36.1	70.4	88.9	72.0	66.1	75.4	70.7
	Standard Deviation	24.6	48,6	45.5	19.2	28.6	15.6	15.4	15.7
Girdlestone with contralateral HTP	1	85	100	100	100	100	50	82	96
	2	10	0	33	50	100	90	92	72
	3	5	25	100	50	51	30	35	64
	Average	33.3	41.7	77.8	66.7	83.7	56.7	69.7	77.3
	Standard Deviation	44.8	52.0	38.5	28.9	28.3	30.6	30.4	16.7

Table 1 - *Individual scores and descriptive measures of SF-36 domains, per group.*

Variable	Descriptive level
Functional capacity	0.935
Physical aspects	0.869
Emotional aspects	0.806
Social aspects	0.152
Pain	0.553
Vitality	0.967
Overall health status	0.664
Mental health	0.544
PO outpatient-based physical therapy	0.182
PO hospital-based physical therapy	0.182
Pain in other joint else	0.999
Pain site	0.999
Special shoes wearing	0.999
Girdlestone hip pain	0.800
HHS	0.239

Chart 1 - *Results of SF-36 descriptive levels for its domains and categorical*

dependent secondarily to the procedure, 1 walked with the aid of crutches, 1 with one crutch and 2 else used only a cane for short distances (Chart 2).

Both groups showed discrepant lower limbs, in an average of 5.5. cm for the group with unilateral GRA (4.0 – 10.0 cm) and 7.0 cm for the group with contralateral HTP (3.5 – 9.5 cm). The Trendelenburg's test was positive for all patients, and, of the 12 assessed patients, only 7 used special shoes. Among the remaining 5 patients, 2 reported that they had not received prescriptions for special shoes, and the other 3 reported not using special shoes because they couldn't adjust to them due to excessive weight and to aesthetic reasons.

Due to the results achieved in the HHS, other additional factors were considered, such as hospital-based or outpatient-based physical therapy postoperatively (PO) (Table 2), pain in another joint and site (Table 3) and the real magnitude of pain in Girdlestone hip (Table 4).

By comparing these categorical variables of interest (Chart 1), we can see that the only ones that would potentially present significant difference should the sample was larger would be postoperative hospital- or outpatient-based physical therapy and HHS.

	Gait		
Girdlestone	**Limping**	**External Support**	**Maximum Distance**
Unilateral	Mild	Walker	6 blocks
	Mild	1 cane-short distances	2 - 3 blocks
	Mild	1 crutch	2 - 3 blocks
	Mild	Walker	Only at home
	Mild	2 crutches	6 blocks
	Moderate	1 cane-short distances	Unlimited
	Severe	Walker	Only at home
	Severe	None	6 blocks
	---	Unable to ambulate	Wheelchair dependent
contralateral HTP	Mild	2 crutches	2 - 3 blocks
	Mild	1 cane-Long distances	Unlimited
	Moderate	2 crutches	Only at home

Chart 2 – *Distribution of Girdlestone groups for gait*

	PO Physical Therapy			
	Outpatient-based		**Hospital-based**	
Girdlestone	**Yes**	**No**	**Yes**	**No**
Unilateral	6	3	6	3
contralateral HTP	0	3	0	3
Subtotal	6	6	6	6
Total	12		12	

Table 2 - *Distribution of Girdlestone groups for PO outpatient- and hospital-based physical therapy variable*

	Pain in other joint else		Pain site		
Girdlestone	**Yes**	**No**	**Lumbar spine**	**Contralateral hip**	**Hip and knee**
Unilateral	6	3	1	3	2
Contralateral HTP	2	1	0	2	0
Subtotal	8	4	1	5	2
Total	12		8		

Table 3 - *Distribution of Girdlestone groups for pain in other joint else and pain site variables*

	Girdlestone hip pain				
Girdlestone	**None**	**Mild**	**Moderate**	**Severe**	**Total**
Unilateral	3	3	2	1	9
contralateral HTP	2	0	1	0	3
Total	5	3	3	1	12

Table 4 - *Distribution of Girdlestone groups for Girdlestone hip pain variable*

DISCUSSION

All the patients in the study presented with a positive Trendelenburg's test and discrepant limbs, which led to limping, which is consistent to the majority of articles[1-20,22,24,25,27-33]. No article mentioned physical therapy, but a number of these stated that this kind of salvage surgery is functionally poor[1,8,12,14,15,17,18,21,22,25-27]. As our overall results confirmed that, we decided to check if the subjects of this study had been submitted to hospital- or outpatient-based physical therapy postoperatively and found that of the 9 subjects of the unilateral GRA group, 6 had undergone both kinds of physical therapy and none of the subjects belonging to group with contralateral HTP was submitted to hospital- and outpatient-based physical therapy postoperatively. Patients submitted to physical therapy were unable to inform its time and frequency, as well as the approach employed. Once the sample is small, the accuracy of estimates is severely compromised. Thus, this result is only indicative that if the sample was larger, there would be potential to differences between groups submitted to physical therapy and those not submitted to it.

We noticed that, of the 12 assessed subjects, 5 presented with no pain at all on Girdlestone hip and only 1 showed it severely, which leads us to think that the overall poor functional result obtained with the HHS is due to the involvement of another joint following GRA, because, of the 12 patients, 8 complained of pain in other regions, with contralateral hip

being the most frequently involved one. Many articles report the presence of signs and symptoms of multiple joints involvement after GRA, such as contralateral hip and/ or knees[5,7,15,21,23,36], stating that these are the major responsible for these patients' functional disability and daily life restraints[5,49].

A number of studies mentioned functional results of patients after GRA[1,5,7-10,12,14,15,17-19,21-23,25,27-29,31]; however, only one article was found reporting that, in some cases, this procedure can be the last resource to assure a goof QoL for patients with hip pathologies[12]. Although no article[1-36] mentioned individuals submitted to GRA in one hip and contralateral HTP, our population (37 patients) was composed of 14 unilateral GRAs and 23 contralateral HTP; therefore, we decided to check for differences between QoL and function in both groups.

By assessing SF-36 results, we noticed that the patients submitted to unilateral procedure showed a higher number of highly scored criteria than the other group; however, sample is small and the only item that seems to present a significant difference when comparing both groups is social aspects. Regarding function, as assessed by us with the HHS, if the sample was bigger, there might be difference between groups; however, we cannot regard this study as completed, because its results are only indicative of its variables' behavior.

CONCLUSIONS

1. Overall, the subjects from unilateral Girdlestone group showed a higher number of SF-36 domains with scores rated as high than the individuals of the contralateral HTP group, although both groups had been scored poorly in the functional capacity item.

2. Of the 12 assessed patients, only one showed an end HHS score that was regarded as good. This patient belonged to contralateral HTP group. The remainder ranged from moderate to poor, with most of the individuals in the unilateral Girdlestone group showing poor scores.

3. Since this sample is small, the accuracy of estimates was severely compromised. Thus, the results described hereon are only indicative of the study variables' behavior and cannot be regarded as finished.

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