

Research Article

Frequency of Erectile Dysfunction Following Pelvic Fracture among Patients Admitted to Two Wits Teaching Hospitals, South Africa

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Abstract

Background: Erectile dysfunction that can range from weak to severe is one of the most important sequelae of pelvic fractures and may be transient or permanent. Importantly, erectile dysfunction is more prevalent when the pelvic fracture is associated with urethral injury. This study aimed to evaluate the frequency of erectile dysfunction post pelvic fracture and determine the frequency of spontaneous recovery of erectile function within the first six months from the time of injury in a South African sample population. **Materials and Methods:** This study was a cross-sectional study of records of patients who were admitted to the Orthopedic Department at Helen Joseph Academic Hospital and the Male Sexual Dysfunction Clinic at Charlotte Maxeke Johannesburg Academic Hospital, in Johannesburg, South Africa, with a pelvic fracture between July 1, 2011 and April 30, 2015. **Results:** A total of 53 patients aged between 18 and 80 years (mean: $7.57 \pm SD3.45$) meeting the study-inclusion criteria participated in the study, of which 50.9% had a B2 type pelvic fracture and 20% had a C type fracture. Of the 53 patients, 43.4% reported erectile dysfunction. The majority (88%) of patients indicated a recovery of erectile function between 2 and 8 months after the injury. However, 86% of those patients were still suffering from other forms of sexual impairment like orgasmic dysfunction and lack of sexual satisfaction. Interestingly, sexual desire seemed to be preserved. Patients with sexual dysfunction were more likely to have had a urethral injury as well as a more severe fracture. **Conclusions:** In our sample of 53 patients, almost half (43.4%) reported sexual dysfunction after a pelvic fracture. Importantly, patients with a severe pelvic fracture and urethral damage should be followed-up after surgery, as the risk of long-term sexual dysfunction is increased in these particular patients.

Keywords: pelvic fracture, erectile dysfunction, tile classification, IIEF score

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1. Introduction

Pelvic fractures usually occur in older people with osteoporosis, due to falls and minor injuries. These types of pelvic fractures are usually not associated with urological complications including erectile dysfunction (ED) [1]. In contrast, pelvic fractures in healthy young people usually occur as a result of high-energy trauma, for example, pedestrian vehicle accidents, motor vehicle accidents, crushing injuries, or fall from heights [2].

There are several classifications of pelvic fractures, the most common classification systems are:

1. Tile Pelvic Classification
2. Young and Burgess Classification

The Tile Pelvic Classification was used in this study. It has three 3 major groups (A, B, and C) with each of these three groups subdivided into three subtypes as follows:

A- Stable pelvic fractures

- A1: the fracture is not involving the pelvic ring (avulsion innominate bone, crest fracture or iliac wing fracture)
- A2: stable or minimally displaced fracture of the pelvic ring
- A3: transverse sacral fracture (Denis zone III sacral fracture)

B- Rotationally unstable, vertically stable

- B1: open book injury (external rotation)
- B2: lateral compression injury (internal rotation)
- B3: bilateral compression injury

C- Rotationally and vertically unstable

- C1: unilateral
- C2: bilateral
- C3: bilateral and associated with acetabular fracture [1]

The other classification of pelvic fracture that could be used is the Young and Burgess Classification of pelvic fractures [3], as shown in Table 1.

Pelvic fractures can result in long-term urological complications, including urethral stricture (as a result of urethral injury), urinary incontinence and ED [4, 5]. Indeed,

TABLE 1: Young and Burgess classification of pelvic fractures [adapted from 3].

Type	Description
(1) Anteroposterior Compression (APC)	
APC I	Diastasis of symphysis < 2.5cm
APC II	Diastasis of symphysis > 2.5cm, diastasis in the anterior part of the SI joint, while posterior SI ligaments are intact
APC III	Diastasis of symphysis > 2.5cm, disruption of both anterior and posterior SI ligaments with dislocation in the SI joint
(2) Lateral Compression (LC)	
LC I	Oblique fracture of pubic Rami and anterior compression fracture of sacral ala on ipsilateral side
LC II	Fracture of pubic Rami and posterior fracture of ipsilateral iliac bone with dislocation
LC III	Ipsilateral lateral compression (LC) and contralateral anteroposterior compression (APC)
(3) Vertical Shear (VS)	
	Fracture by superior and posterior force

urethral injury is seen in 4–25% of pelvic fracture cases. There is a strong relationship between pelvic fracture and subsequent sexual dysfunction, especially if the patient had a urethral injury too, compared to the other causes of ED, such as pelvic (or perineal) trauma that accounts for 3–5% of all ED cases [6].

It was believed that the early urethral repair can help to avoid ED [7– 12]. However, Subasi et al. (2004) studied 55 male patients who had severe pelvic fractures. Eleven (20%) of them had urethral injuries, and six (14.6%) of the 11 patients developed ED regardless of timing of urethroplasty (early or late) [4]. Furthermore, Barrett et al. (2013) compiled a systemic review and a meta-analysis, reviewing 161 articles on pelvic fractures accompanied by urethral injuries. They compared outcomes of those who had early urethral realignment to those who had late repair. Both groups showed ED [13].

The prostatic urethra is the most fixed portion of the human male urethra. It is fixed to the symphysis pubis and ischiopubic rami by puboprostatic ligaments and the urogenital diaphragm, making the prostatic urethra vulnerable to rupture by any shearing forces accompanying pelvic fracture [14–16]. Furthermore, any superior or posterior displacement of the symphysis pubis will also result in disruption of the prostatic urethra [6]. Patients will present with urethral bleeding, urinary retention and a high riding prostate on clinical examination. Urethral injury following a pelvic fracture most commonly occurs in the bulbomembranous part of the urethra [17].

Few studies have reported on the overall incidence of sexual dysfunction following pelvic trauma. In 2001, Machtens et al. reported in their study that 11.6% of men with

pelvic fractures developed ED [18]. Malavaud et al. (2000) indicated that all men who sustained pelvic fractures reported low sexual satisfaction with 23.9% having significant sexual dysfunction and 42% who suffered urethral injuries reporting impotence [17]. King et al. (1975) reported that 42% of men who had urethral injuries developed sexual dysfunction, while sexual impairment was seen in 5.5% [19]. In addition, Malavaud et al. (2000) who also studied men with pelvic injuries using the International Index of Erectile Function (IIEF) score, showed that 80.4% of these patients reported recovery of their sexual activity within four weeks, while the rest reported different degrees of sexual impairment [17].

Importantly, the etiology of ED following pelvic fracture may be due to vascular, neurological, corporal and/or psychological factors [19–21]. Vascular damage in the pelvis may be in the form of vessel-wall tear or intimal damage, which may lead to vascular thrombosis and blockage [6, 22]. Indeed, Sharlip et al. (1981) reviewed the pelvic angiography of patients who had obliteration of the internal pudendal artery at the level of the urogenital diaphragm. They remained sexually impaired despite good collateral vascular formation and good retrograde filling of the dorsal and deep penile vessels [23]. The formation of an arterio-venous fistula between the iliac vessels may also cause ED but can be surgically corrected [6].

Severe pelvic neurological damage may also result in ED, especially if the damage involves the lumbosacral plexus. Neurological damage may occur at the time of injury or when the patient undergoes pelvic surgery. Some of these patients show partial neurological recovery within 3–24 months [6].

Corporal injury in those who suffered pelvic trauma can also contribute to cause ED. The proximal part of the corpora is fixed to the surrounding structures and to the pubic rami, making it susceptible to shearing forces and hematoma formation. Healing of the hematoma by fibrosis around the corpora may occur, making it non-dilatable during sexual excitement [24].

Furthermore, due to the trauma of the injury and the long hospital stay, patients are susceptible to depression, which in turn affects sexual activity [6]. Approximately up to 10% of people who survived a major traumatic injury may develop post-traumatic stress disorders [25], of which 80% will develop sexual dysfunction caused by the post-traumatic stress-disorder medications [26]. However, sexual performance can be improved by the withdrawal of such medications [27]. Importantly, any patient who has sexual impairment will develop a psychological response, which can ultimately worsen any underlying anatomical pathology [6].

All these factors contribute to the patient's sexual health after the trauma of a pelvic fracture, and should thus be taken into consideration by clinicians.

2. Materials and Methods

This was a retrospective cross-sectional study of pelvic fracture patient records. The study included patients aged between 18 and 80 years who never suffered from sexual dysfunction before sustaining a major pelvic trauma. The Tile Pelvic Classification system was used to determine the severity of the pelvic fracture, finding that 50.9% of the patients had a B2-type fracture and 20% had a type C fracture. The study has excluded those patients who suffer from chronic medical illnesses such as diabetes mellitus with hypertension, those suffering from psychological illnesses, those who sustained head or spinal injuries and those were taking medication to treat sexual dysfunctions.

2.1. Inclusion criteria

- a. Patients who sustained type B or type C pelvic fractures (Tile Pelvic Classification)
- b. Patients aged between 18 and 80 years

2.2. Exclusion criteria

- a. Patients who had ED prior to the pelvic fracture injury
- b. Patients suffering from other major medical- or psychological illnesses
- c. Patients on medication that can affect erectile function
- d. Patients who sustained head- or spinal injury
- e. Patients who sustained major trauma and were admitted for three or more weeks in the intensive care unit (ICU)
- f. Patients who used medications to treat ED within four weeks before answering the questionnaire
- g. Patients with diabetes mellitus accompanied by hypertension

2.3. Time of the study

The data collection took place between November 1, 2015 and November 20, 2015.

2.4. Study location

The study was performed at the Helen Joseph Academic Hospital (HJAH) and the Male Sexual Dysfunction Clinic (MSDC) at the Charlotte Maxeke Johannesburg Academic Hospital (CMJAH).

2.5. Sample size

All telephonically contactable patients who met the study inclusion criteria and consented to participate were included in the study.

2.6. Data collection

The database of the Orthopedics Departments at HJAH and the MSDC at CMJAH was accessed to obtain the details about the patient. We accessed the electronic databases of these two hospitals using the name and hospital number to obtain contact details for each patient.

Each patient was contacted telephonically with an open speaker in the presence of a witness/translator. The information sheet was read to the patient before telephonic consent was obtained. Patients were asked to verbally complete the IIEF score as per Appendix A, reporting on frequency of erection, successful penetration, confidence and maintenance of erection, satisfaction of intercourse and sex life, reaching climax and sexual desire.

The orthopedic database was also accessed to obtain patients' demographic details and to classify them according to the severity of the pelvic fracture, using the Tile Pelvic Fracture Classification.

3. Data Analysis

Descriptive statistics using mean and standard deviation or median and range, as appropriate, were used for analysis of numerical data. Categorical data were described using percentages. For the comparison of patients with sexual dysfunction to those

without, a combination of unpaired *t*-tests and Fishers Exact tests were used for numerical and categorical data, respectively.

4. Results

A total of 53 participants answered the IIEF score questionnaire.

The orthopedic database was accessed to obtain contact details and to classify the patients according to the severity of the pelvic fracture, using the Tile Pelvic Fracture Classification. Half (50.9%) of the patients had a B2 type of fracture and 20% had a type C fracture.

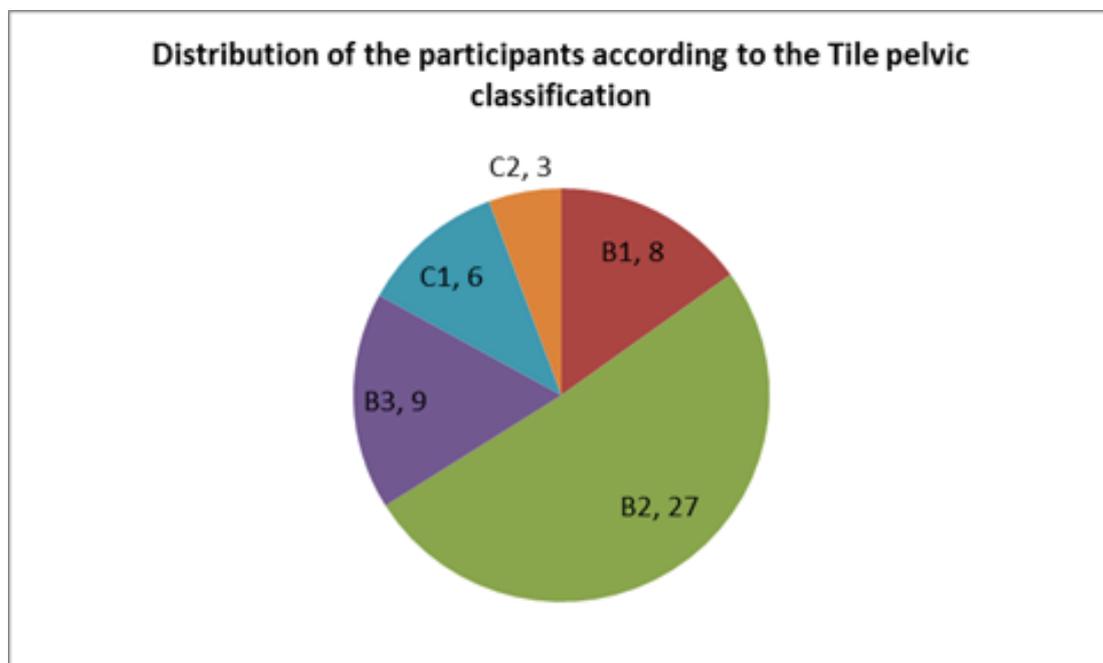


Figure 1: Distribution of the participants according to the Tile pelvic classification.

There were no significant differences in age and time since injury or sexual drive between the two groups (Type B versus Type C) analyzed. Patients with sexual dysfunction were significantly more likely to have urethral injury and type C pelvic fractures. Patients with sexual dysfunction had significantly lower scores (when they answered IIEF score) indicating greater severity of injury) on all sub-sections of the sexual dysfunction questionnaire (except for sexual drive), and had a lower overall score.

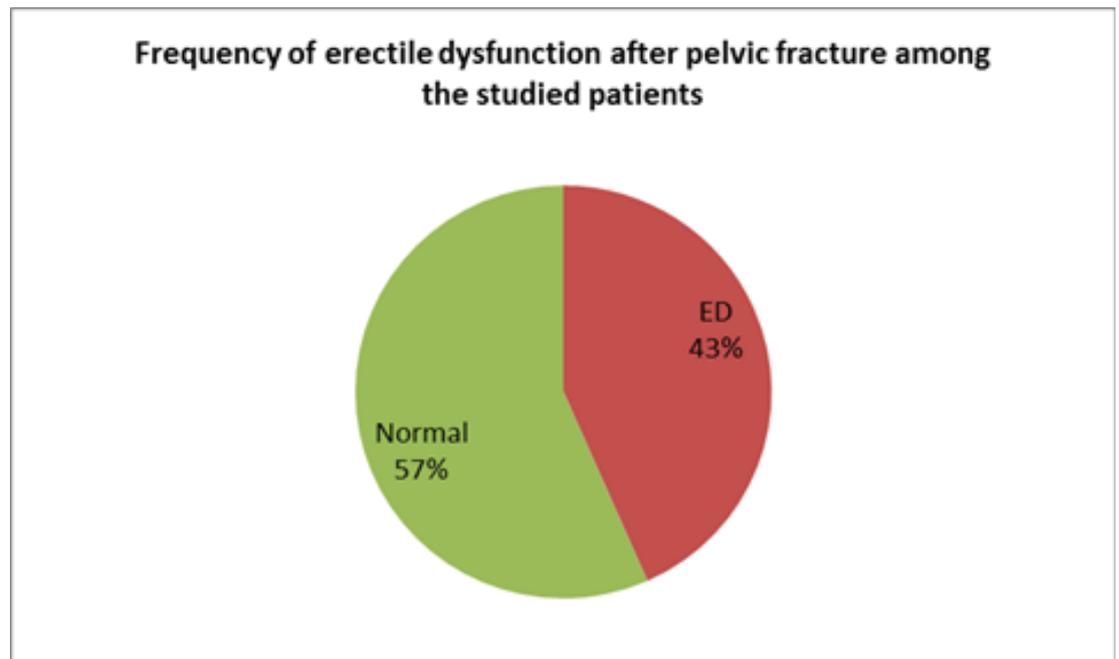


Figure 2: Frequency of ED after pelvic fracture among the studied patients.

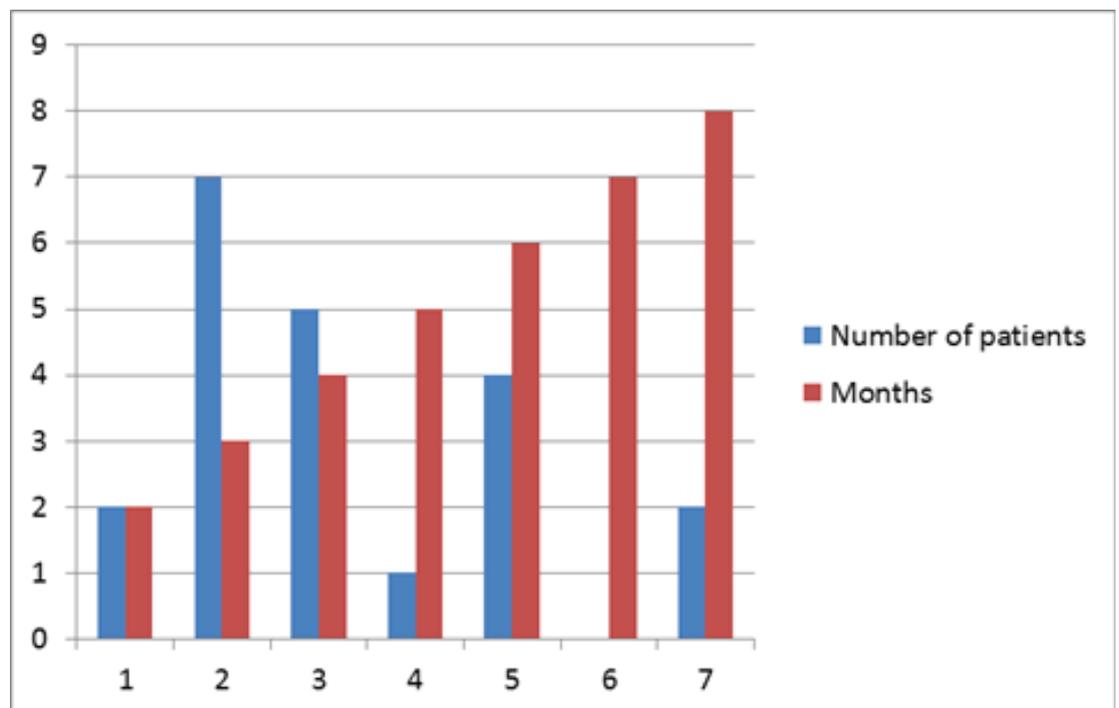


Figure 3: Spontaneous recovery period of ED following pelvic fractures.

5. Discussion

The paucity in the literature on studies assessing the frequency of ED after pelvic fractures and the spontaneous recovery of erectile function in South Africa necessitated this study.

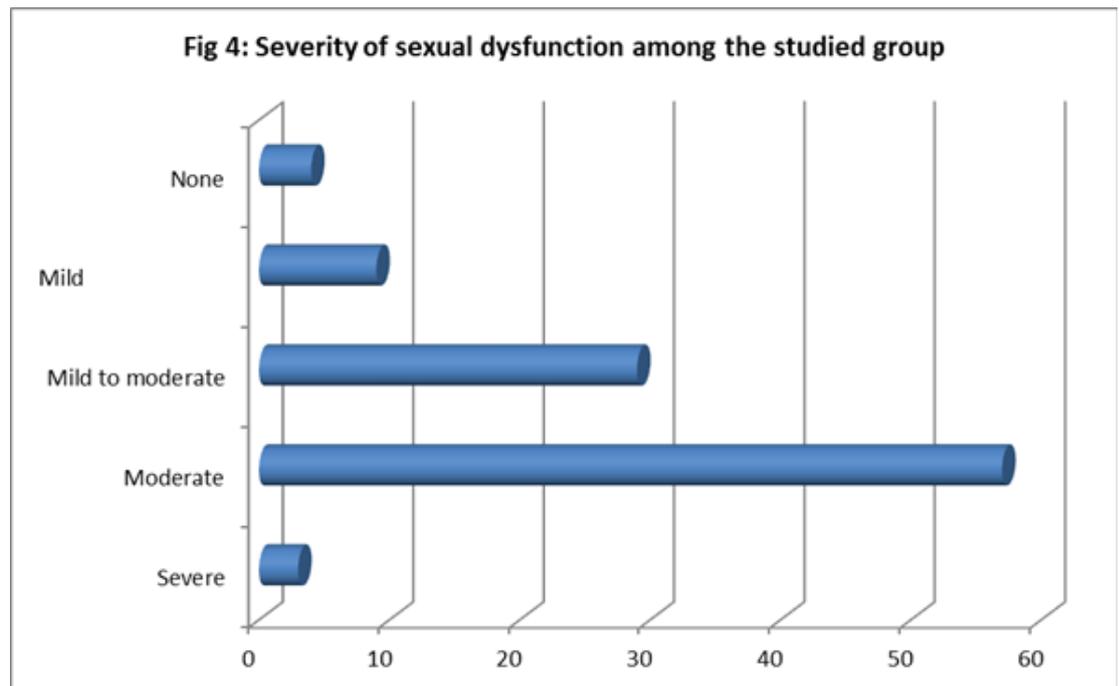


Figure 4: Severity of sexual dysfunction among the studied group (According to IIEF score).

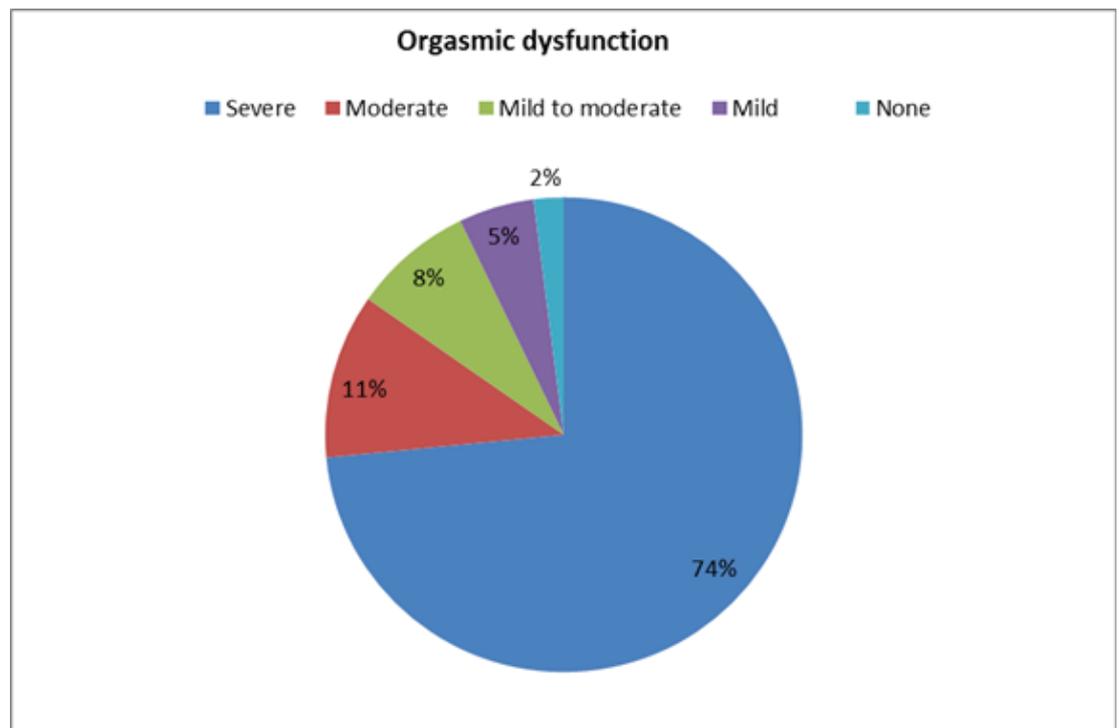


Figure 5: The severity of orgasmic dysfunction among the studied patients.

A number of pelvic classification systems exist. The most commonly used systems are the Tile Pelvic Classification and the Young and Burgess Classification [1]. In the present study, the Tile Pelvic Classification was used to classify the pelvic fractures of participating patients. The majority ($n = 27$ or 50.9%) of the participating patients had

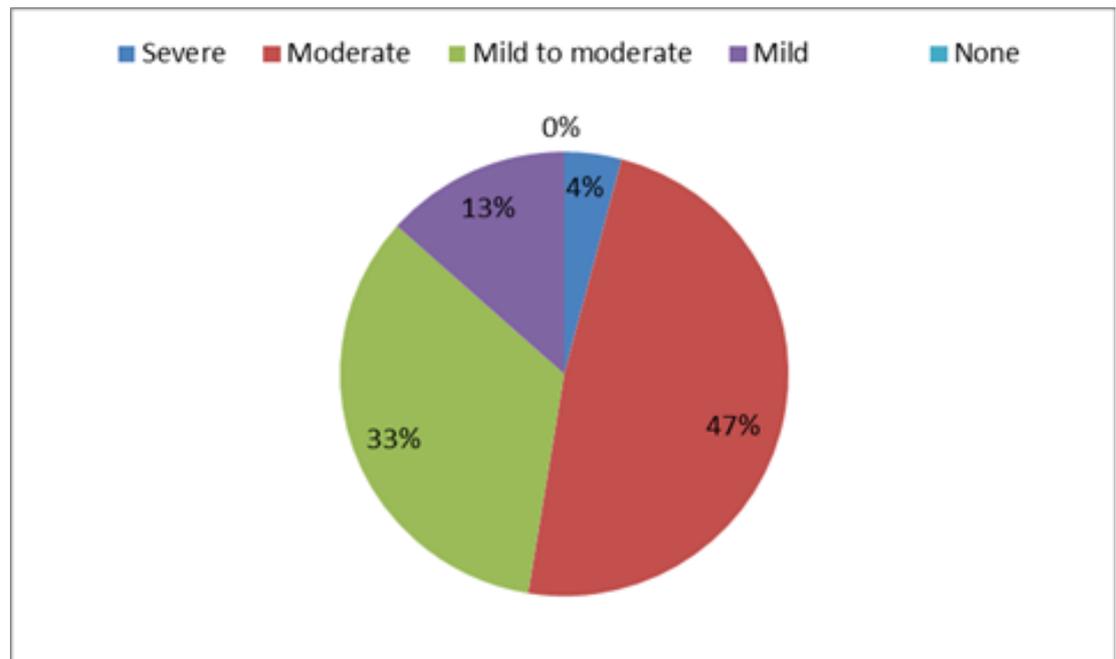


Figure 6: The severity of sexual desire impairment among the studied group.

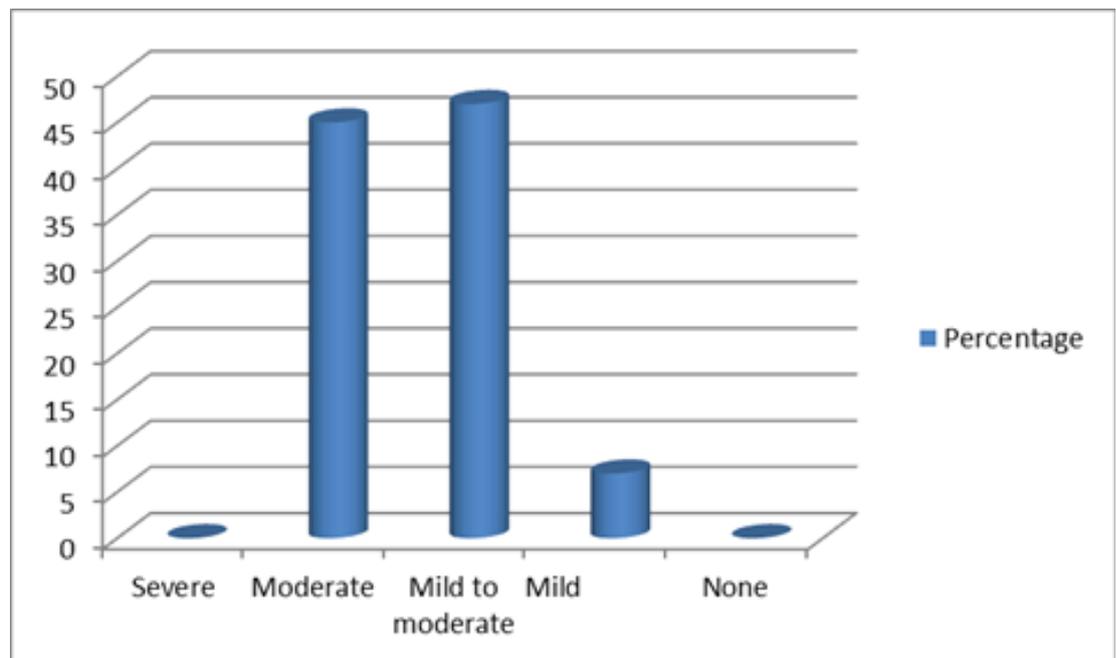


Figure 7: The prevalence of intercourse dissatisfaction.

Tile B2 fractures. Of the other 26 patients, 8 had B1 (15%), 9 had B3 (16.9%), 6 had C1 (11.3%), and 3 had C2 (5.6%) type pelvic fractures. Of the 53 patients included in our study, 23 (43.3%) developed ED secondary to their pelvic fractures. Although, 4 out of 53 (7.5%) participants had hypertension (well-controlled) and 8 patients (16%) were smokers; all 12 of these patients had normal erectile function.

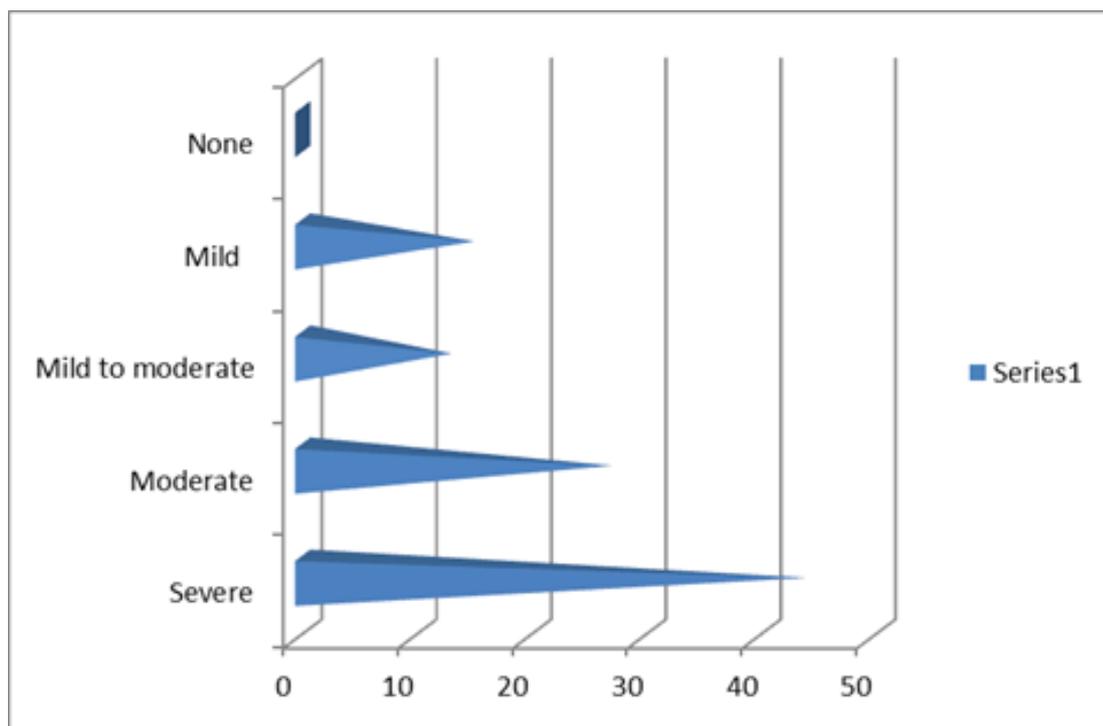


Figure 8: The overall sexual dissatisfaction among the studied group [based on the International Index of Erectile Function (IIEF-5)].

TABLE 2: Statistical analysis of patients with and without sexual dysfunction.

Number of Patients	No Dysfunction	Dysfunction	p-value	Test
53	30	23		
Age (years)	34.8 (14.3)	38.6 (13.2)	0.3317	Unpaired <i>t</i> -test
Time since injury (months)	28.9 (14.4)	24.9 (10.8)	0.2963	Unpaired <i>t</i> -test
Urethral injury (No/Yes)	28/2	9/12	0.0001	Fishers exact
Type B versus C*	29/1	15/6	0.0151	Fishers exact
Erectile dysfunction (median-range)	10.5(8-19)	14(6-27)	0.0001	Fishers exact
Orgasmic dysfunction	2(2-8)	2(2-9)	0.0368	Fishers exact
Sexual drive	4(3-7)	5(2-8)	0.2558	Fishers exact
Intercourse satisfaction	6(4-10)	8(5-11)	0.0002	Fishers exact
Overall	2(2-7)	5(2-8)	0.001	Fishers exact

Note: *Type B or C pelvic fracture as per Tile Pelvic Classification.

The overall rate of ED after pelvic fracture studies reported in the literature is 11–42%. King et al. (1975) performed a study on 90 patients and found that 42% developed ED [19], whereas Malavaud et al. (2000) reviewed 46 patients who sustained pelvic fractures and found that 23.9% had ED [17]. Furthermore, King et al. (1975) found in their study that out of the 42% of patients who developed ED, only 4 (5.5%) had permanent sexual dysfunction [19]; but unfortunately they did not specify which aspects of sexual function was affected. In contrast to King et al. (1975), Malavaud et al.

(2000) reported that 29.7% of the pelvic fracture patients in his study developed a permanent sexual dysfunction [17]. However, Machtens et al. (2001) reported in a much larger study that out of 1 722 participants, only 200 (11.6%) suffered ED [18]. Although the majority (86%) of patients in this study reported recovery of erectile function within 2 to 8 months, the other domains of the IIEF (orgasmic function, libido, sexual satisfaction and overall satisfaction) except for sexual desire, according to patients' answers, were lower than in those patients who had no sexual dysfunction after the fracture. Indeed, out of the 86% of patients who reported recovery of erectile function, 72% still had severe orgasmic dysfunction, 80% had mild to moderate sexual desire (libido) impairment, 92% had mild to moderate intercourse dissatisfaction, and 70% suffered moderate to severe overall dissatisfaction.

Malavaud et al., (2000), reported that a percentage as high as 80.4% of the patients in their study, showed spontaneous sexual function recovery within 4 weeks [17]. This is in agreement with our study in which 86% of pelvic fracture patients reported recovery of their sexual functions and reported being able to perform sexual intercourse to some extent. In contrast, most of the participating patients in our study reported that erections were only recovered within 3 months to 8 months post injury. However, most of these patients were not completely sexually satisfied, and therefore, we reviewed the other domains of sexual function. We noticed that such patients indeed had impairment in one or more domains, compared to patients who had not developed ED after pelvic fracture. The possible reasons for the sexual dissatisfaction may be chronic skeletal pain, painful ejaculation or urethral stricture as a result of the pelvic fracture. Some of the patients with urethral strictures may still have a stricture as sequelae to the pelvic fracture and some may have had a failed urethroplasty and are awaiting repeat procedures.

Although spontaneous ED recovery may be explained by recovery of neuropraxia, the absorption of a pelvic hematoma compressing the neurovascular bundle, other as yet unknown reasons may also contribute to spontaneous recovery and this warrants further studies.

6. Study Limitations

The lack of a functioning electronic database in the Department of Orthopedics at the CHBAH and the CMJAH limited the patient study numbers, as badly hand-written and incomplete patient records had to be resorted to instead. Since it was a retrospective study, contact details of patients had changed over time, making telephonic patient

contact difficult and thus limiting the patient numbers. Unavailability of literature about this condition in South Africa added to the limitations of this study.

7. Conclusion

This study found the frequency of ED post pelvic fractures in a South African sample population to be 43.3%, which concurs with the finding by King et al. (1975) of 42%. In addition, this study determined the frequency of spontaneous recovery of erectile function within the first 3–8 months from the time of injury to be 86%, which agrees with the 80.4% reported in the study of Malavaud et al. (2000). Although spontaneous ED recovery may be explained by the recovery of neuropraxia, other as yet unknown reasons do exist and warrant further investigation. However, most of the ED-recovered patients in this study were not completely sexually satisfied due to chronic skeletal pain, painful ejaculation, or urethral stricture as a result of the pelvic fracture, which is the ground for future studies.

Ethical Clearance

The project was approved by the Human Research Ethics Committee of the University of the Witwatersrand (Medical). The ethics certificate was obtained on August 28, 2015 with the clearance number: M150502 as per Appendix B. All the patients' personal details were only made available to the researcher for the purpose of this research study. Patient confidentiality was respected by collecting the data anonymously and by using a numbering system on the data collection sheet without any personal identifiers such as names, surnames, or birth dates.

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Appendices

Appendix A



**Charlotte Maxeke Johannesburg Academic Hospital, University of the Witwatersrand,
Johannesburg, Department of Urology**

Study title: Erectile Dysfunction Following Pelvic Fracture

DATA COLLECTION SHEET

(1) Participant information

Participant study number:

Age:

Race:

African White Asian Colored Other

Date of injury

Associated urethral injury: Yes/No

Type of pelvic fracture:

Chronic medical illnesses: Yes/No (if yes please specify)

Smoking: Yes/No

(2) IIEF Questionnaire Assessment

If you are sexually active and/or desire evaluation, please continue with the questions below (Circle one answer for each question)

1. Over the past 4 weeks, how often were you able to get an erection during sexual activity?

0. No sexual activity
1. Almost always or always
2. Most times (much more than half the time)
3. Sometimes (about half the time)
4. A few times (much less than half the time)
5. Almost never or never

2. Over the past 4 weeks, when you had erections with sexual stimulation, how often were your erections hard enough for penetration?

0. No sexual stimulation
1. Almost always or always
2. Most times (much more than half the time)
3. Sometimes (about half the time)
4. A few times (much less than half the time)
5. Almost never or never

The next question is only applicable to patients who show normal score: Have you had sexual difficulties in the first six months after your injury? Yes/No If yes, for how long? Please circle.

1 month; 2 months; 3 months; 4 months; 5 months; 6 months

Questions 3, 4, and 5 will ask about erections you may have had during sexual intercourse.

3. Over the past 4 weeks, when you attempted sexual intercourse, how often were you able to penetrate (enter) your partner?

0. Did not attempt intercourse
1. Almost always or always
2. Most times (much more than half the time)
3. Sometimes (about half the time)
4. A few times (much less than half the time)
5. Almost never or never

4. Over the past 4 weeks, during sexual intercourse, how often were you able to maintain your erection after you had penetrated (entered) your partner?

0. Did not attempt intercourse
1. Almost always or always

2. Most times (much more than half the time)
3. Sometimes (about half the time)
4. A few times (much less than half the time)
5. Almost never or never

5. Over the past 4 weeks, during sexual intercourse, how difficult was it to maintain your erection to completion of intercourse?

- o. A few times (much less than half the time)
1. Did not attempt intercourse
2. Almost always or always
3. Most times (much more than half the time)
4. Sometimes (about half the time)
5. Almost never or never

6. Over the past 4 weeks, how many times have you attempted sexual intercourse?

- o. No attempts
1. 1-2 attempts
2. 3-4 attempts
3. 5-6 attempts
4. 7-10 attempts
5. 11 or more attempts

7. Over the past 4 weeks, when you attempted sexual intercourse how often was it satisfactory for you?

- o. Did not attempt intercourse
1. Almost always or always
2. Most times (much more than half the time)
3. Sometimes (about half the time)
4. A few times (much less than half the time)
5. Almost never or never

8. Over the past 4 weeks, how much have you enjoyed sexual intercourse?

- o. No intercourse
1. Very highly enjoyable
2. Highly enjoyable

3. Fairly enjoyable
4. Not very enjoyable
5. Not enjoyable

9. Over the past 4 weeks, when you had sexual stimulation or intercourse how often did you ejaculate?

- o. Did not attempt intercourse
1. Almost always or always
2. Most times (more than half the time)
3. Sometimes (about half the time)
4. A few times (much less than half the time)
5. Almost never or never

10. Over the past 4 weeks, when you had sexual stimulation or intercourse how often did you have the feeling of orgasm or climax (with or without ejaculation)?

- o. No sexual stimulation or intercourse
1. Almost always or always
2. Most times (much more than half the time)
3. Sometimes (about half the time)
4. A few times (much less than half the time)
5. Almost never or never

Questions 11 and 12 ask about sexual desire. Let's define sexual desire as a feeling that may include wanting to have a sexual experience (for example, masturbation or intercourse), thinking about having sex or feeling frustrated due to a lack of sex.

11. Over the past 4 weeks, how often have you felt sexual desire?

1. Almost always or always
2. Most times (much more than half the time)
3. Sometimes (about half the time)
4. A few times (much less than half the time)
5. Almost never or never

12. Over the past 4 weeks, how would you rate your level of sexual desire?

1. Very high
2. High

3. Moderate
4. Low
5. Very low or none at all

13. Over the past 4 weeks, how satisfied have you been with you overall sex life?

1. Very satisfied
2. Moderately satisfied
3. About equally satisfied and dissatisfied
4. Moderately dissatisfied
5. Very dissatisfied

14. Over the past 4 weeks, how satisfied have you been with your sexual relationship with your partner?

1. Very satisfied
2. Moderately satisfied
3. About equally satisfied and dissatisfied
4. Moderately dissatisfied
5. Very dissatisfied

15. Over the past 4 weeks, how do you rate your confidence that you can get and keep your erection?

1. Very high
2. High
3. Moderate
4. Low
5. Very low

Domain Questions # Total Score

Erectile Function 1, 2, 3, 4, 5, 15 _____

Orgasmic Function 9, 10 _____

Sexual Desire 11, 12 _____

Intercourse Satisfaction 6, 7, 8 _____

Overall Satisfaction 13, 14 _____

Clinical Interpretation

I. Erectile function total scores can be interpreted as follows: Score Interpretation

- 0-6 Severe dysfunction
- 7-12 Moderate dysfunction
- 13-18 Mild to moderate dysfunction
- 19-24 Mild dysfunction
- 25-30 No dysfunction

II. Orgasmic function total scores can be interpreted as follows: Score Interpretation

- 0-2 Severe dysfunction
- 3-4 Moderate dysfunction
- 5-6 Mild to moderate dysfunction
- 7-8 Mild dysfunction
- 9-10 No dysfunction

III. Sexual desire total scores can be interpreted as follows: Score Interpretation

- 0-2 Severe dysfunction
- 3-4 Moderate dysfunction
- 5-6 Mild to moderate dysfunction
- 7-8 Mild dysfunction
- 9-10 No dysfunction

IV. Intercourse satisfaction total scores can be interpreted as follows: Score Interpretation

- 0-3 Severe dysfunction
- 4-6 Moderate dysfunction
- 7-9 Mild to moderate dysfunction
- 10-12 Mild dysfunction
- 13-15 No dysfunction

V. Overall satisfaction total scores can be interpreted as follows: Score Interpretation

- 0-2 Severe dysfunction
- 3-4 Moderate dysfunction
- 5-6 Mild to moderate dysfunction
- 7-8 Mild dysfunction
- 9-10 No dysfunction

The next question is only applicable to patients who show normal score: Have you had sexual difficulties in the first six months after your injury? Yes/No If yes, for how long? Please circle.

1 month; 2 months; 3 months; 4 months; 5 months; 6 months

Appendix B



R-14/49 Dr Daou Gdeh

HUMAN RESEARCH ETHICS COMMITTEE (MEDICAL)
CLEARANCE CERTIFICATE NO. M150502

NAME: Dr Daou Gdeh
(Principal Investigator)

DEPARTMENT: Urology
 Charlotte Maxeke Johannesburg Academic Hospital
 Chris Hani Baragwanath Hospital/Helen Joseph Hospital

PROJECT TITLE: Erectile Dysfunction Following Pelvic Fracture

DATE CONSIDERED: 29 May 2015

DECISION: Approved unconditionally

CONDITIONS:

SUPERVISOR: Prof Mohamed Haffejee

APPROVED BY: 
 Professor P Cleaton-Jones, Chairperson, HREC (Medical)

DATE OF APPROVAL: 28/08/2015
 This clearance certificate is valid for 5 years from date of approval. Extension may be applied for.

DECLARATION OF INVESTIGATORS

To be completed in duplicate and **ONE COPY** returned to the Secretary in Room 10004, 10th floor, Senate House, University.

I/we fully understand the conditions under which I am/we are authorized to carry out the above-mentioned research and I/we undertake to ensure compliance with these conditions. Should any departure be contemplated, from the research protocol as approved, I/we undertake to resubmit the application to the Committee. **I agree to submit a yearly progress report.**

Principal Investigator Signature _____

Date _____

PLEASE QUOTE THE PROTOCOL NUMBER IN ALL ENQUIRIES