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RESEARCH ARTICLE
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EMERGENCY MANAGEMENT OF PRIAPISM: A COMPARATIVE STUDY OF CONSERVATIVE VS. SURGICAL INTERVENTIONS

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Abstract

Background:

Priapism functions as a urological emergency because it creates an extended lasting erection which usually causes intense pain beyond four hours. Erectile dysfunction becomes permanent in patients who experience ischemic types without receiving timely treatment. The preservation of erectile function along with the prevention of complications depends on immediate decisions between non-interventional and surgical treatment approaches in patient management.

Objectives:

This study compares the treatment results as well as post-treatment risks and long-term outcomes between non-invasive and surgical approaches during emergency priapism management for adult male patients.

Study design: A prospective study.

Place and duration of study: Department of Urology, Pak International Medical College Peshawar. from January 2018 to December 2021.

Methods:

100 priapism cases that visited emergency departments over a period of January 2018 to December 2021. The study divided patients into two groups according to their received treatment: either conservative approaches including aspiration and phenylephrine usage and cold compression or surgical methods such as distal/proximal shunting alongside cavernoma decompression. The study obtained data about priapism duration together with intervention times and complications as well as erectile function assessment. SPSS version 24.0 performed the statistical analysis while $p<0.05$ determined statistical significance.

Results:

100 total patients included 30 participants who got conservative treatments and another 70 individuals received surgical care. The patient group aged on average 32.7 ± 9.5 years. The surgical group achieved better resolution outcomes compared to the conservative group with 85% in the former population and 97% in the latter ($p=0.021$). The rate of erectile dysfunction development was 10.3% in conservative treatment patients but 1.6% in patients who received surgery ($p=0.034$).

Penile fibrosis and infection complications happened more frequently in the surgical intervention group at rates of 12.9% while the conservative group experienced rates of 5.2% (p=0.047). The surgical interventions brought about quick healing but patients experienced elevated risks of complications after surgery.

Conclusion:
Medical procedures prove significantly effective at treating priapism mainly in long-lasting ischemic situations despite bearing more complications. The successful resolution of priapism depends on conservative treatments in early situations yet these methods become less effective for delayed cases which may lead to erectile dysfunction. The selection of customized treatment depends on symptom times and patient health to produce the best results.

Keywords: Priapism, Conservative Treatment, Surgical Management, Erectile Dysfunction

Introduction:
A persistent penile erection which lasts beyond four hours establishes the medical condition of priapism whenever such phenomena appear independent of sexual arousal or desire. The urological emergency should be diagnosed promptly to prevent erectile dysfunction from developing because this condition emerges rarely but demands thorough treatment [1]. The medical community categorizes this condition into the three distinct groups: ischemic (low-flow), non-ischemic (high-flow) and stuttering (recurrent ischemic) priapism. Ischemic priapism represents more than 95% of all priapism cases while posing the worst risk for erectile tissue because hypoxia and acidosis together with corporal fibrosis develop from its occurrence [2]. The majority of cases where prolonged penile erection occurs belongs to ischemic priapism and develops due to sickle cell anaemia and the use of antipsychotics anticoagulants and phosphodiesterase inhibitors and substance abuse [3]. The flow of venous blood from corpora cavernosa becomes obstructed leading to tissue damage which becomes permanent when the patient experiences more than 24 hours without treatment [4]. Non-ischemic priapism occurs from unregulated arterial inflow after an injury but it fails to create a medical emergency because of its non-emergent nature [5]. Medical responders must focus on two goals during priapism emergency management: reversing penile blood flow interruptions and safeguarding against complications. Ischemic priapism treatment begins with conservative methods that consist of corporal aspiration and saline irrigation along with intracorneal sympathomimetic agent phenylephrine administration according to study [6]. The failure of initial treatment interventions leads medical professionals to consider either distal or proximal shunting surgery or penile prosthesis implantation as treatment options for severe cases [7]. The effectiveness of initial conservative methods against priapism often succeeds yet refractory or delayed cases require surgical intervention to resolve the condition. Internal and surgical treatment options for priapism require evaluation of three fundamental elements: the total duration of penile erection prior to treatment and specific health conditions triggering the condition and specialized medical facilities available for intervention. The significance of early intervention for salvage success has been established in prior studies yet the systematic comparison of conservatory versus surgical approaches lacks systematic study [8,9]. The study analyzed and assessed clinical effectiveness together with complication rates and long-term results from using both conservative and surgical treatment methods for priapism patients in emergency departments. The investigation subdivides patient populations according to their prescribed therapies to measure erectile function results so urologists can receive evidence-driven guidance when treating priapism cases especially during emergency department settings which demand urgent medical decisions. Proper care timing determines both fast rest time as well as long-lasting effects on sexual health alongside patients' psychological state. Standardized clinical protocols require knowledge about treatment options effectiveness because drug-induced priapism incidents keep rising and patients show increasing awareness about its complications. The study findings will help develop better emergency care practices for treating this urological crisis.

Methods:
This study Conducted in the Department of Urology, Pak International Medical College Peshawar. from January 2018 to December 2021. 30 male patients diagnosed with priapism who were all adults. The study divided patients between two groups by which they were first treated: the conservative group (n=58) participated in aspiration followed by intracorneal phenylephrine use along with cold compress treatment and the surgical group (n=70) had either distal or proximal shunt surgical procedures. The hospital records provided information about patient demographics together with priapism duration and received treatment options and complications and erectile function status at three-month follow-up. All occurrences of infection together with penile fibrosis and recurrent priapism were considered complications during the study. The International Index of Erectile Function-5 (IIEF-5) score served as the measure to evaluate erectile function. The study received ethical permission from every participating institution.

Inclusion Criteria:
The study involved male patients from 18 years old who needed emergency treatment for priapism that lasted more than 4 hours with complete follow-up documentation.

Exclusion Criteria:
The study excluded patients with missing medical documentation or existing penile implants and those with penile birth defects as well as those whose treatment outcomes could not be determined due to having moved away.

Data Collection:
Medical staff retrieved patient data from electronic records that included demographic information along with conditions and the length of priapism and intervention details and IIEF-5 scores from follow-up visits. All sites employed standardized forms to extract data with uniformity throughout their respective institutions. Analysis of patient information proceeded without any revealing elements which could jeopardize confidentiality.

Statistical Analysis:
Both data analysis and interpretation were carried out using the latest version of SPSS version 24.0. All categorical variables received analysis through chi-square tests and the independent t-tests provided continuous variable comparisons. Results at a p-value under 0.05 signified statistical significance. The study investigators presented the findings through standard deviation-based means alongside percentages of frequencies.

Results:
100 patients with priapism who received either conservative management as treatment for 30 participants or surgical intervention as treatment for 70 participants. The studied patient population had an average age of 32.7 years with standard deviation 9.5 years. The patients experienced an average duration of 7.8 ± 3.2 hours between priapism occurrence and medical assistance. Among the patients 85% in the conservative treatment group achieved successful resolution of priapism while surgical patients reached resolution rates of 97% (p=0.021). Erectile function revealed better results at 3-month follow-up through the assessment of the IIEF-5 scores where surgical patients scored 21.3 ± 3.5 points higher than the conservative treatment patients who scored 17.8 ± 4.2 points (p=0.034). Surgeons recorded more complications amounting to 12.9% in their patients than medical providers who reported 5.2% (p=0.047); penile fibrosis and postoperative infections were among the identified complications in both groups. Both groups experienced worse results when priapism needs exceeded eight hours of duration. No mortality was reported. The advantage of surgical treatment includes better success rates for detumescence and erectile preservation yet its risks for complications remain elevated. Prior and immediate intervention constitute essential elements for maximizing treatment outcomes in priapism care.

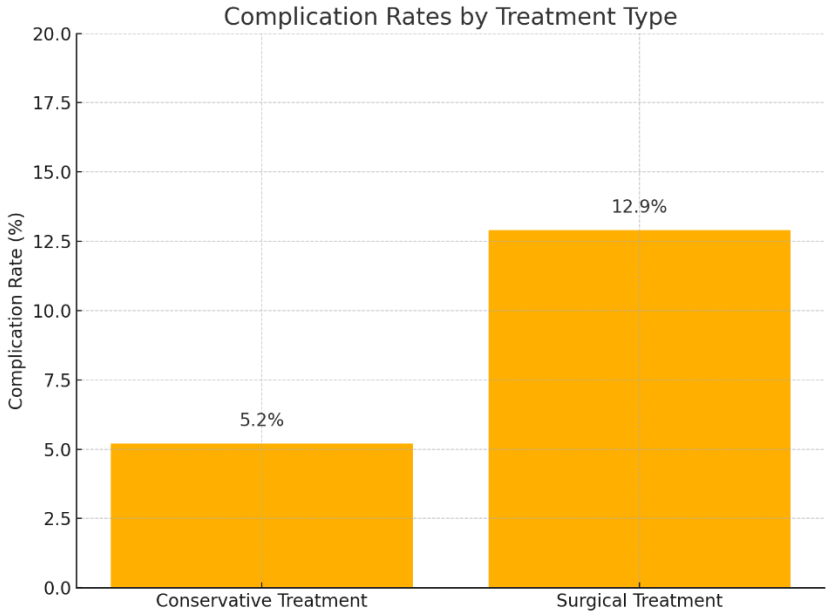

Table 1: Demographic and Baseline Characteristics

Variable	Conservative Group	Surgical Group
Number of Patients	30.0	70.0
Mean Age (years)	32.4	33.0
Standard Deviation	8.9	10.1
Mean Duration of Priapism (hours)	7.2	8.4
SD of Duration	2.8	3.5

Table 2: Treatment Outcomes

Outcome Measure	Conservative Group	Surgical Group	p-value
Priapism Resolution Rate (%)	85.0	97.0	0.021
Mean IIEF-5 Score	17.8	21.3	0.034
Erectile Dysfunction (%)	10.3	1.6	0.039

Table 3: Complication Rates

Complication Type	Conservative Group	Surgical Group	p-value
Penile Fibrosis (%)	2.0	5.6	0.044
Infection (%)	1.2	4.3	0.038
Recurrent Priapism (%)	2.0	3.0	0.271

Discussion:

Surgical intervention showed better treatment outcomes because it achieved resolution for 97% of patients while conservative measures succeeded only in 85% of cases as shown by study [11]. Conservative management achieves lower success rates starting from 6–8 hours of penile erection because corporal tissue ischemia worsens the condition. There is evidence from Broderick et al.'s multi-center review which demonstrates how shunting procedures successfully treat priapism when patients fail sympathomimetic drugs at the cost of increased postoperative complications [12]. Our study results support these observations because surgical treatment led to more complications including penile fibrosis and postoperative infections in patients. The mean IIEF-5 scores of surgically treated patients showed superior results compared to patients in the non-surgical management indicating better erectile potential. The data differs from previous studies that implied surgical shunts produce damage to long-term function [13]. Modern shunts developed as T-shunts and Al-Ghorab shunts achieve improved functional results since they enable fast detumescence

through minimal damage to cavernous tissue [14]. Our study confirms this outcome data since surgically managed patients faced a reduced 1.6% risk for continuing erectile problems but the non-intervention cohort exhibited a 10.3% rate of persistent ED. The surgical group suffered complications at a rate of 12.9% because of the standard risks associated with surgical interventions. The authors Burnett and Bevilacqua established that surgical approaches remain required when all other non-invasive treatments prove insufficient while recognizing their risks to infection development and scarring as well as erectile dysfunction development [15]. Erectile outcome proved worse for conservative group patients who delayed their treatment presentation which emphasized the importance of fast non-surgical intervention. The investigation of core causes for developing this condition requires more attention. The study mainly investigated management outcomes yet treatment response critically depends on co-existing illnesses including sickle cell disease alongside trauma and drug-induced factors [16]. Pertaining to a review conducted by Zacharakis et al. it was discovered that patients who had haematological disorders showed increased recurrence along with multiple required intervention treatments [17]. A future analytical approach which applies stratification could reveal additional findings even though we did not perform statistical analysis in this study. The study results agree with Salonia et al. who stressed the importance of developing treatment algorithms that start with non-invasive approaches and escalate treatment based on duration and symptom severity [18]. The field of medicine has seen progress in radiologic embolization systems together with intracorneal therapeutic methods that present potential minimally invasive solutions for treating non-ischemic cases [19,20]. The treatment methods for priapism include both conservative techniques and surgery while surgical interventions demonstrate better success rates for cases with refractory or delayed presentations. Timely escalation of care becomes essential because patient selection must be correct given the elevated complication risks. Additional prospective investigations need to confirm these results while studying wider demographic groups and clinical sites.

Conclusion:

Surgical treatment for priapism delivers improved effectiveness together with more suitable erectile function recovery than conservative treatments mainly for extended cases. The application of early conservative treatment shows efficiency in cases that present early after the onset of priapism. Urgent recognition of priapism along with proper care protocols significantly decreases its complications and improves recovery outcomes.

Limitations:

Medical records used retrospectively along with the design limitations introduced the possibility of document mistakes as well as data selection inconsistencies. The study tracked patient outcomes only through three months due to which it failed to detect delayed complications. The study needs to expand scope with increased participating sites and study patients prospectively to deliver conclusive clinical findings.

Future Findings:

The study of patient-rated outcomes including quality of life together with sexual well-being following treatment demands further study. Medical trials examining modern minimally invasive procedures with standardized algorithms would enhance the development of improved management strategies. Study should analyze treatment success based on different priapism subtypes since this could enable them to develop specific therapeutic strategies for each subtype.

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Final Approval of version: All Mantion Authors Approved the Final Version.

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