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ORIGINAL ARTICLE

Surgical management of pelvic organ prolapse in Algiers: a retrospective descriptive single-center case series

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ABSTRACT

Objective. To characterize the clinical features, operative management, and early postoperative outcomes of women undergoing surgical correction for pelvic organ prolapse (POP) at a tertiary referral hospital in Algiers, Algeria. **Materials and Methods**. A retrospective descriptive case series was conducted on 31 women surgically treated for POP between January 2022 and December 2023. Strict inclusion criteria—requiring a specialist-confirmed diagnosis and complete operative documentation—were applied. Analyzed variables included age, parity, menopausal status, prolapse stage, presenting symptoms, surgical procedures, and early postoperative results. Data were analyzed using descriptive statistics. **Results**. The mean age was 63.2 years (range 47–80) with a mean parity of 5.7. Most patients (87.1%) were postmenopausal. Multicompartment prolapse was documented in 87.1% of cases, with stage III disease predominating (90.3%). A history of home delivery was recorded in 71.0% of patients. Vaginal hysterectomy combined with anterior and posterior colporrhaphy was the most frequent procedure (58.1%). An uncomplicated immediate recovery occurred in 90.3% of cases; minor complications were managed conservatively. The average hospital stay ranged from 3 to 5 days. **Conclusion**. In this series, pelvic organ prolapse primarily affected older, multiparous, and postmenopausal women, typically presenting at an advanced stage. Vaginal surgical correction yielded satisfactory immediate outcomes. These findings underscore the need for strengthened preventive programs and timely referral pathways within the healthcare system.

Keywords: pelvic organ prolapse, vaginal hysterectomy, colporrhaphy, multiparity, Algeria.

1. INTRODUCTION

Pelvic organ prolapse (POP) is a prevalent gynecological condition defined by the downward displacement of pelvic structures consequent to failure of the pelvic floor musculature and connective tissue. The disorder disproportionately affects multiparous and postmenopausal women, among whom it significantly impairs quality of life through pelvic pressure, lower urinary tract dysfunction, and sexual discomfort [1–3]. Reported prevalence varies widely depending on diagnostic criteria and the population studied, ranging from incidentally identified asymptomatic anatomical displacement to symptomatic disease requiring therapeutic intervention [4–6]. Established risk factors include high parity, advancing age, vaginal delivery, menopausal transition, overweight status, and conditions chronically elevating intra-abdominal pressure [7–9].

In low- and middle-income countries, particularly across North Africa, sociocultural barriers, restricted access to gynecological care, and low public awareness of pelvic floor disorders collectively promote delayed healthcare-seeking and presentation at advanced

disease stages [10–12]. Operative management therefore represents the predominant therapeutic option for the majority of women reaching tertiary referral care in these contexts.

Despite the substantial clinical burden of POP, published data characterizing its management in the Algerian setting remain scarce. Institution-based descriptive studies are essential for cataloging disease patterns, operative practices, and near-term outcomes, and for establishing the evidence base required for preventive and health system planning. This study documents the clinical profile, operative approach, and early postoperative outcomes of women undergoing POP surgery at a tertiary referral hospital in Algiers.

2. MATERIALS AND METHODS

Study Design and Setting

This retrospective descriptive case series was conducted within the Department of Obstetrics and Gynecology of a tertiary referral hospital in Algiers, Algeria, and enrolled women who underwent surgical treatment for pelvic organ prolapse from January 2022 through December 2023.

Study Population and Sample Size Justification

The study population comprised 31 women who underwent operative management for POP within the defined period. The comparatively modest sample size over two calendar years at a tertiary center reflects two converging factors: first, the application of strict eligibility criteria requiring both complete retrievable operative documentation and a specialist-confirmed diagnosis; second, a significant proportion of women referred with symptomatic prolapse were managed conservatively or transferred prior to surgery, thereby reducing the eligible surgical pool. This limitation is acknowledged throughout and discussed explicitly in the Discussion section.

Inclusion criteria

Diagnosis of POP established by a gynecology specialist. Operative management performed within the study period. Availability of complete medical and operative records

Exclusion criteria

Incomplete or missing medical records. Non-surgical management of prolapse. Associated gynecological malignancy

Clinical Assessment

Prolapse was diagnosed in the lithotomy position with the Valsalva maneuver to elicit maximal descent. Staging followed the Pelvic Organ Prolapse Quantification (POP-Q) system [13,14]. While global staging (I–IV) was consistently assigned, individual compartment-specific POP-Q measurements (Ba, Bp, C, D) could not be uniformly retrieved given the retrospective design; findings are accordingly reported by overall POP-Q stage. Future prospective studies at this center should integrate full compartment-level POP-Q documentation as standard.

Symptom burden was assessed through structured clinical history-taking at the preoperative visit, conducted by the attending gynecologist. Patients were systematically questioned regarding: (1) pelvic pressure or bulge sensation; (2) lower urinary tract symptoms (frequency, urgency, stress incontinence); and (3) sexual discomfort, graded as mild, moderate, or severe by patient self-report. Validated instruments such as the PFDI-20 [3] were not in systematic use during this study period — a recognized limitation — and symptom data should accordingly be interpreted as qualitative clinical descriptors rather than standardized outcome measures.

Data Collection

Data were extracted retrospectively from hospital medical and operative records. Variables included age, parity, menopausal status, occupation, presenting complaints, prolapse type and POP-Q stage, surgical procedures performed, perioperative complications, and duration of inpatient stay.

Surgical Technique

All procedures were performed via the vaginal route under regional or general anesthesia, consistent with our department's preference for the vaginal approach as the primary surgical strategy for symptomatic POP, irrespective of compartment involved [1,14]. Technique selection reflected intraoperative findings, compartment-specific anatomy, and individual patient factors, with the following operative preferences characterizing our unit's practice.

Apical support — our unit's routine incorporation of McCall culdoplasty

A distinctive feature of our surgical approach is the systematic performance of a modified McCall culdoplasty in all patients undergoing vaginal hysterectomy, including those in whom apical descent was not the primary or most symptomatic compartment. This reflects our team's view that vault prolapse prevention is best achieved prophylactically at the time of hysterectomy rather than deferred to secondary repair. Uterosacral ligaments are incorporated bilaterally into the cuff closure, with the suture line serving both to close the peritoneum and to provide durable vault suspension [16,17].

Anterior colporrhaphy — selective plication depth

For anterior compartment repair, the extent of midline fascial plication was calibrated intraoperatively to the degree of pubocervical fascial attenuation identified on dissection, rather than applying a standardized plication pattern. This patient-specific approach aims to avoid over-plication, which can contribute to postoperative dyspareunia, while ensuring adequate cystocele correction.

Posterior colporrhaphy and perineorrhaphy — threshold-based decision

Posterior repair was performed for clinically symptomatic rectocele with demonstrable posterior wall descent. Perineorrhaphy was added when perineal body length was less than 2 cm on examination or when levator ani diastasis was palpable intraoperatively, rather than routinely. This selective approach reflects our unit's preference for minimizing perineal dyspareunia while restoring functional perineal support [14,18].

Anti-incontinence surgery — urodynamics-conditional policy

Our department does not perform routine concomitant anti-incontinence surgery in the absence of preoperative urodynamic confirmation of stress urinary incontinence. In patients with suspected occult SUI unmasked on preoperative prolapse reduction, Kelly plication was the procedure available within our resource setting [15]. Midurethral slings were not performed in the absence of urodynamic documentation given limitations in follow-up infrastructure.

Outcome Measures

Primary outcomes were the distribution of surgical procedures performed and immediate postoperative results, encompassing perioperative morbidity and length of hospital stay. Outcomes were assessed within the inpatient observation window only (mean 3–5 days). No structured outpatient follow-up protocol was in place; accordingly, all statements regarding absence of early recurrence are confined to the inpatient period and should not be interpreted as evidence of longer-term surgical durability.

Statistical Analysis

Descriptive statistical methods were used exclusively. Continuous variables are expressed as means with standard deviations and ranges; categorical variables as absolute frequencies and percentages, uniformly reported to one decimal place throughout the manuscript and tables.

3. RESULTS

Epidemiological Characteristics

Thirty-one women underwent surgical treatment for POP over the study period. Mean age was 63.2 years (range 47–80; SD 8.4), with the majority falling within the sixth decade. Postmenopausal status was documented in 87.1% (n=27). Mean parity was 5.7 (SD 1.2). A history of home (non-facility) delivery was recorded in 71.0% (n=22). Baseline demographic characteristics are summarized in Table 1.

Table 1. Demographic and Epidemiological Profile (n=31).

Characteristic	Value (Mean ± SD or n/%)
Age (years)	63.2 ± 8.4 (range: 47–80)
Mean parity	5.7 ± 1.2
Postmenopausal status	27 (87.1%)
Body mass index (kg/m²)	28.4 ± 4.1
History of home delivery	22 (71.0%)

SD = standard deviation.

Table 2. Clinical Characteristics and Surgical Management (n=31).

Variable	n	%
Clinical Findings		
Stage III prolapse (predominant)	28	90.3%
Multicompartment involvement	27	87.1%
Vaginal/pelvic bulge sensation	22	71.0%
Lower urinary tract symptoms	16	51.6%
Sexual discomfort	11	35.5%
Surgical Procedures		
VH + APR + McCall culdoplasty	18	58.1%
Isolated anterior colporrhaphy	6	19.4%
Isolated posterior colporrhaphy	4	12.9%
Perineorrhaphy / vaginal vault repair	3	9.7%

VH = vaginal hysterectomy; APR = anterior and posterior colporrhaphy; McCall = McCall culdoplasty for apical suspension.

Clinical Characteristics

Multicompartment disease predominated, affecting 87.1% (n=27) of patients. Stage III prolapse was the most prevalent presentation (90.3%, n=28). Principal presenting complaints included vaginal or pelvic bulge sensation (71.0%), lower urinary tract symptoms (51.6%), and sexual discomfort (35.5%; Table 2).

The high prevalence of home delivery (71.0%) is a contextually specific finding of public health significance in this series. Home deliveries in Algeria frequently occur without trained obstetric personnel, structured perineal protection, or episiotomy, exposing the pelvic floor to unmonitored and unrepaired obstetric trauma — circumstances recognized as predisposing to levator ani disruption, pudendal neuropathy, and subsequent prolapse [7,8,22]. This contextual factor likely contributes to both the advanced stage and the multicompartment nature of disease at presentation and is addressed further in the Discussion.

Surgical Procedures

All 31 patients were managed by the vaginal route. Vaginal hysterectomy with combined anterior and posterior colporrhaphy and McCall culdoplasty (VH + APR + McCall) was performed in 58.1% (n=18). Remaining procedures comprised isolated anterior colporrhaphy (19.4%, n=6), isolated posterior colporrhaphy (12.9%, n=4), and perineorrhaphy or vaginal vault repair (9.7%, n=3). Procedural distribution is detailed in Table 2.

Postoperative Outcomes

Immediate postoperative recovery was uncomplicated in 90.3% (n=28), assessed over the inpatient window of 3–5 days. Minor complications included transient urinary retention (n=2, 6.5%) and mild local wound infection (n=1, 3.2%), both resolving with conservative management. No major complications — including hemorrhage, visceral injury, or early anatomical recurrence — were documented during the inpatient period. These outcomes are confined to the immediate postoperative phase; long-term recurrence or functional durability cannot be assessed from the available data.

4. DISCUSSION

Main Findings

This retrospective descriptive case series documents the clinical profile and operative management of women undergoing POP surgery at a tertiary referral hospital in Algiers, Algeria. The predominant findings — advanced-stage multicompartment disease in older, multiparous, postmenopausal women — are consistent with the natural history of POP in LMIC settings where delayed healthcare-seeking and restricted access to early gynecological surveillance remain structural constraints [10–12, 19]. By contrast, in high-income country cohorts, earlier-stage detection is the norm, driven by routine preventive gynecological care and higher health literacy [20–22].

Home Delivery as a Context-Specific Predisposing Factor

A clinically and epidemiologically important finding in this series is the high prevalence (71.0%) of a history of home delivery. In the Algerian context — particularly among older, peri-urban, and semi-rural women — home deliveries often occur without trained obstetric attendance, structured perineal support, or episiotomy. The consequences for pelvic floor integrity are predictable: unmonitored, sustained voluntary effort during second stage without perineal protection, combined with unrecognized and unrepaired perineal lacerations, creates conditions for levator ani disruption and pudendal neuropathy, both established antecedents of pelvic organ prolapse [7,8,22].

This association has received insufficient attention in the North African literature, yet it is arguably the single most modifiable population-level risk factor in this context. Neither pelvic floor rehabilitation programs nor public awareness campaigns will substantially reduce the burden of advanced-stage POP in Algeria unless the promotion of skilled facility-based delivery is simultaneously prioritized. This recommendation extends beyond the scope of gynecology and engages maternal health policy, rural health infrastructure, and community health worker training.

Surgical Outcomes and the Short-Term Follow-Up Caveat

Vaginal hysterectomy with anterior and posterior colporrhaphy was the predominant procedure (58.1%), consistent with international evidence supporting this approach as safe and effective for advanced, multicompartment, uterine-descent–predominant prolapse in resource-limited settings [1,21]. Immediate inpatient outcomes were satisfactory in 90.3% of patients, with only minor self-resolving complications.

A critical qualification is required: the absence of early anatomical recurrence in this series refers exclusively to the inpatient observation window of 3–5 days. No structured outpatient follow-up protocol was in place, and the dataset is inherently limited in its capacity to speak to long-term surgical durability. Recurrence rates for vaginal POP repair in the published literature vary from approximately 10 to 30% over five years [9,14], underscoring the need for prospective cohort studies with extended follow-up in this population before confident conclusions regarding operative efficacy can be drawn.

Strengths and Limitations

The principal strength of this investigation is its focus on a population for which surgically managed POP data are nearly absent in the indexed literature. As a foundational descriptive dataset from a major Algerian tertiary center, it provides reference data relevant to comparable resource-limited settings across North Africa and the broader LMIC context.

Methodological limitations must be explicitly acknowledged. First, the retrospective single-center design limits generalizability. Second, compartment-specific POP-Q measurements (Ba, Bp, C, D) were not uniformly retrievable, precluding fine-grained anatomical characterization. Third, symptom data — including sexual discomfort — were collected through structured clinical history rather than validated instruments (e.g., PFDI-20), introducing subjectivity bias. Fourth, outcomes were confined to the inpatient period (3–5 days), with no long-term follow-up. Fifth, preoperative urodynamic assessment was not routinely available. These limitations are inherent to retrospective single-center work in resource-limited settings and are not unique to this study; they collectively reinforce the urgency of prospective, multicenter research in the region.

Clinical and Public Health Implications

The high proportion of advanced-stage disease at presentation calls for reinforced public health action. Targeted priorities include promotion of supervised facility-based delivery and skilled birth attendance, structured pelvic floor rehabilitation programs, optimized intrapartum perineal management, family planning counseling to address high parity, and promotion of early gynecological consultation. From an operative standpoint, standardized preoperative evaluation protocols — including POP-Q staging and urodynamic assessment — and validated patient-reported outcome measures would substantially improve the quality of both clinical care and future research.

Future Research

Future studies should employ prospective multicenter designs incorporating standardized compartment-level POP-Q documentation, validated patient-reported outcomes (e.g., PFDI-20), and extended follow-up of at least 12–24 months to capture recurrence rates. Population-based prevalence studies are additionally required to establish the true epidemiological burden of POP in Algeria and to guide rational resource allocation. Exploration of genetic susceptibility factors relevant to North African populations may further enable risk stratification and targeted preventive intervention in women identified as predisposed to advanced-stage disease [24].

5. CONCLUSION

This retrospective descriptive case series documents the clinical profile and operative management of women undergoing POP surgery at a tertiary referral hospital in Algiers. Pelvic organ prolapse disproportionately affected older, multiparous, postmenopausal women and consistently presented at an advanced stage, reflecting the combined impact of delayed consultation, restricted early gynecological access, and — critically — a high prevalence of unattended home delivery. Multicompartment anatomical involvement was the dominant pattern, and vaginal surgical techniques constituted the sole operative modality employed.

Vaginal hysterectomy with anterior and posterior colporrhaphy, supplemented by routine McCall culdoplasty for apical support, was the most frequently performed procedure and yielded favorable immediate inpatient outcomes with a low minor complication rate. Statements regarding the absence of recurrence must be understood as confined to the inpatient observation window; long-term durability data are not available from this dataset and represent the principal target for future prospective research.

The high burden of advanced-stage disease in this cohort, compounded by the prevalence of home delivery (71.0%), underscores the imperative for integrated public health action: promotion of facility-based supervised delivery, structured pelvic floor rehabilitation, improved obstetric practice, and timely gynecological referral. Multicenter prospective studies with standardized anatomical documentation and sustained follow-up are required to inform clinical guidelines and health policy across comparable settings [11,15,24].

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