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Peyronie's Disease in an Elderly Ghanaian Gentleman

—A Case-Report and Literature Review

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Abstract

Background: Peyronie's disease is characterized by fibrous plaque formation in the tunica albuginea, leading to penile curvature and sexual dysfunction. Surgical correction is often required in cases of severe deformity or significant functional impairment. **Aim**: To present the case of a patient with severe Peyronie's disease who underwent surgical correction using an autologous fascia lata graft. **Case Presentation**: We report the case of a 77-year-old Black-African gentleman with Peyronie's disease, presenting with a self-reported penile curvature of 70 degrees and significant sexual frustration. He was managed surgically with plaque excision followed by a tunica albuginea patch using a subcutaneously harvested autologous fascia lata graft, all performed in a single surgical session. **Conclusion**: This case highlights the importance of individualized surgical planning and patient-specific considerations in achieving optimal outcomes in the management of Peyronie's disease, particularly in cases requiring grafting for severe curvature.

Keywords

Peyronie's Disease, Penile Trauma, Tunica Albuginea, Penile Deformity, Sexual Frustration, Careful Diagnosis, Tailored-Surgical Therapy, Calcific-Plaques, Autologous Fascia Lata Graft, Water-Tight Repair

1. Introduction

Peyronie's Disease (PD) is a superficial fibrosing disorder of the penis, causing plaque formation and penile deformity with a prevalence ranging from 0.3% to 20.3% [1]. While the exact cause is unknown, it is thought to involve penile trauma followed by aberrant fibrosis or dysregulated wound healing and this can negatively impact sexual and psychosocial function of both patients and their partners [1]. Diagnosis of PD is primarily based on a detailed history and physical examination, including evaluation of the penis in both flaccid and erect states. Treatment modalities for PD are diverse and include oral, topical, intralesional, mechanical, and surgical therapies. Collagenase Clostridium histolyticum is the only FDA-approved drug for the treatment of PD and improves penile curvature and symptom-bother [1] [2]. Surgical intervention is indicated in men with significant, stable penile curvature and generally involves penile plication and plaque incision/excision and grafting with or without the placement of an Inflatable Penile Prosthesis [1] [2].

Kyei *et al.* (2017) provided a brief review of Peyronie's disease in individuals of African origin, focusing on its clinical presentation and management challenges [3]. They highlighted that Peyronie's disease is underreported in individuals of African origin, possibly due to cultural stigmas and lack of awareness. The review discussed the typical presentation of penile curvature, pain, and erectile dysfunction in affected patients. They also emphasized the need for early diagnosis and tailored treatment options to improve outcomes in this population [3].

2. Case Presentation

A 77-year-old hypertensive male of Black-African descent; a non-smoker, presented with complaints of penile curvature upon erection with onset about 12 months prior to presentation. He had no alcohol intake, and did not have any known dyslipidemia. The patient denied any trauma to the penis or pelvis. No previous urethral surgery or catheterization was reported. He had no personal or family history of Dupuytren contracture. Client affirmed that he first noticed three lumps in his penis which gradually caused the curvature, estimated as a ventral penile curvature of 70 degrees. He presented for urologic evaluation because of unmet sexual needs and frustrations at sexual attempts resulting from the penile curvature and hard lumps.

His visual analogue pain score [VAS [4]] was 0/10, and he had no lower urinary tract symptoms. A subjective assessment of erection was evaluated using the International Index of Erectile Function [IIEF [5]] questionnaire, and the Sexual Health Inventory for Men [SHIM [6]] scores were both 17/25 which inferred mild erectile dysfunction. He also scored a zero, in assessment of depression using Patient Health Questionnaire 9 from MDCalc.com [7].

On penile palpation during the physical examination, there were three firm to hard, non-tender lumps on the penis (dorso-medial, and ventro-medial); two on the proximal one-third of the shaft and one on the mid shaft. Penile vibration

sensation [2] was normal over the glans penis and the shaft for 128, 256 and 512 Hz tuning-forks but was impaired over the penile lumps for 512 Hz. Diagnostic assessment (see **Table 1**) was as follows:

Table 1. Summary of diagnostic assessment.

Investigations	Findings
Penile Doppler Ultrasound	Dense fibrocalcific plaques in proximal upper penile septum extending to midshaft. Thickened tunica albuginea in ventral corpora cavernosa. Two fibrocalcific plaques: right = 1.0 cm & 0.5 cm; left = 1.3 cm & 1.1 cm (see **Figure 5**). Normal superficial dorsal vein flow; absent deep dorsal vein flow. Normal dorsal penile, cavernosal, and urethral arteries.
Abdominopelvic Ultrasound (USG)	Prostate enlarged (42.2 cm^3) with regular capsular margins and calcification (serum total *PSA was normal; *DRE, benign). No focal mass. Bladder wall uniform, no intraluminal pathology. Pre-void volume: 217 ml; negligible post-void residual.
Additional Ultrasound Findings	Liver 13.3 cm, homogenous parenchyma, smooth surface, sharp edge. No duct dilatation or focal masses. Other abdominal organs within normal limits.
Other Tests	*ECG, chest x-ray, haematology, biochemistry, hormonal profile (testosterone, prolactin, *FSH, *LH) all normal. *PSA: 2.5 ng/ml.

*PSA:Prostate-Specific Antigen; LH: Luteinizing Hormone; FSH: Follicle Stimulating Hormone; ECG: Electrocardiogram; DRE: Digital Rectal Examination.

A diagnosis of Peyronie's disease was made based on the history, physical examination and the presence of mature calcified plaques on penile Doppler ultrasonogram (PDUSG). Medical therapy was deemed unlikely to be effective [1]. The patient was counselled, and surgery was scheduled for plaque excision and autologous fascia lata grafting, with anaesthetic assessment and informed consent obtained.

Surgical Management

The surgery was performed under general anesthesia. His stretched flaccid penile length was 15 cm, flaccid girth was 9cm; erection induced preoperatively with intracavernosal saline instillation showed an erect length of 15.5 and girth of 11.9 [2]. The penile curvature at erection measured by a protractor [2] was 42 degrees ventral (**Figure 1**). A sub-coronal circumferential incision was made and the penis was degloved to the penile base. A tourniquet was then applied, and the tunica plaques were identified and excised ([1] [2]; **Figure 2**). On the other hand, plaques within the cavernosal tissue were incised [1] [2] with a z-plasty-like incision. The resulting defect in the tunica albuginea after the excision of plaques was 7 × 2.4 × 0.3 cm. Fascia lata measuring 10 × 4 cm was harvested by subcutaneous stripping from the anterolateral aspects of the thigh. A continuous suturing with non-absorbable sutures was used to patch the tunica defect with the harvested graft tissue (**Figure 3**). Hemostasis was secured and the integrity of the patched tunica albuginea was tested using artificially induced erection with normal saline and tourniquet. No leakage of fluid was observed, and the penis appeared straightened.

The penile wound was closed in 2 layers with vicryl 2 - 0 suture, to the dartos and buck's fascia as well as the skin (**Figure 4**). The thigh wounds were sutured with nylon 2 - 0 via simple interrupted sutures. A 20-French, two-way Foley's catheter was passed; and connected to a urine bag. Histopathological examination of the excised plaques revealed widespread dense fibrosis and isolated areas of ossification in keeping with clinical diagnosis of Peyronie's disease.

The patient had an uneventful recovery post-operatively on the ward; his catheter was removed on the fifth day post-operatively and he was discharged later that day after wound care. The patient was started on alternate daily 50 mg doses of bicalutamide for 21 days to diminish his erections and allow for stable graft [1] [2]. After this 21-day period, bicalutamide was discontinued, and regular doses of phosphodiesterase-inhibitors were started to improve blood flow to the erectile tissue [2]. Penile physiotherapy was then started after this phase [1] [2]. The patient appeared confident and satisfied with the initial results of the surgical intervention he had. He has since started experiencing regular nocturnal penile tumuscence (NPT). Follow-up continues.

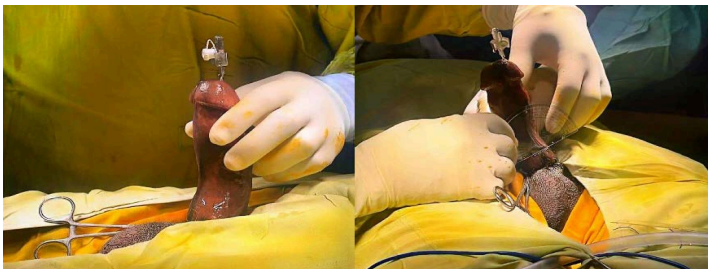


Figure 1. Induced erection and measuring of angle of curvature.

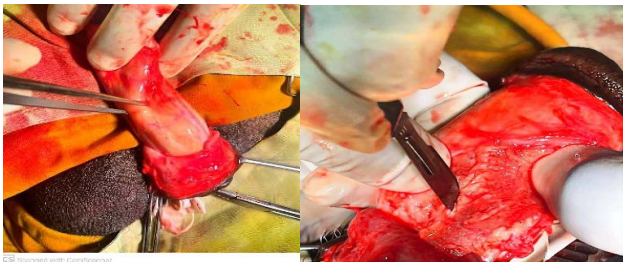


Figure 2. Identification and excision of plaques after degloving penis.

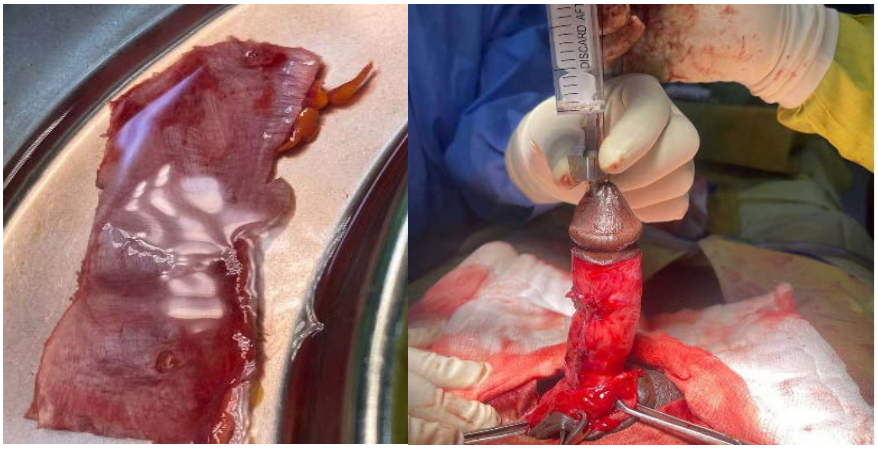
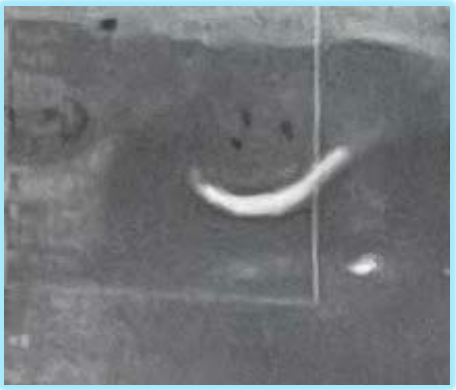


Figure 3. Harvesting and Suturing of Fascia Lata Graft to the defect in the tunica albuginea.

Figure 4. Final penile form.



NOTE: Please see the supplemental material for the full-set of step-by-step clinical and intraoperative pictures on the case.

Figure 5. The Pre-operative Penile Doppler Ultrasound showing a curvilinear calcific plaque.

3. Discussion

The features of our index case, largely align with various aspects of pre-existing literature, but with some notable differences.

The index patient is a 77-year-old man with no history of penile trauma or

Dupuytren contracture; presented with about 1-year history of hard penile lumps and curvature. He scored 17/25 on IIEF and SHIM implying mild erectile dysfunction; and was not depressed. Penile vibration sensation [1] [2] was normal for 128 and 256 and 512 Hz, but impaired over the penile lumps for 512 Hz. His penile Doppler ultrasound which showed dense fibrocalcific plaques (**Figure 5**) and thickening of the tunica albuginea and corpora cavernosa. The dorsal penile arteries, the cavernosal arteries and the urethral arteries were normal. The penile curvature on erection was 42 degrees ventral (**Figure 1**), penile length of 15.5 cm and girth of 11.9 cm. He underwent excision of Peyronie's plaques (**Figure 2**) and autologous facia Lata grafting ([2] **Figure 3**). His post-operative management included alternate daily 50 mg doses of bicalutamide for 21 days only, then regular phosphodiesterase-inhibitors, for 6 weeks, followed by penile physiotherapy [2]. He appeared confident and satisfied with the initial results of the surgical intervention.

Peyronie's disease (PD) is most simply, referred to as a fibrotic wound-healing disorder of the tunica albuginea. Its primary aetiology is believed to be trauma or microtrauma to the tunica albuginea during sexual intercourse or masturbation combined with impaired wound healing which results in fibrocalcific plaques that cause penile deformity, curvature, hinging, narrowing and shortening [8] [9]. PD usually occurs during the fifth to sixth decades of life, but can occur at any age and patients typically present with palpable penile plaques, penile curvature and pain during erection [10]. It is usually associated with erectile dysfunction, and severe penile deformity preventing intercourse. There may be a flail penis, impaired vascular function, and psychological distress or anxiety due to the deformity [11]. Many patients with PD tend to overestimate the degree of curvature. Most patients are Caucasians. As noted in this report, the index patient was a 77-years old Black-African man with palpable penile plaques, penile curvature and an associated mild erectile dysfunction, and considerable sexual frustration. He estimated his penile curvature at about 70 degrees an over-estimate of the clinical measurement of 42 degrees, which is the usual experience [1] [9].

PD is broadly differentiated into an acute ("active") inflammatory phase characterized by variable penile pain and progressive penile deformity, and a chronic ("stable") phase characterized by symptom stability and pain improvement/resolution [2]. Many experts consider PD to be stable when it is present for at least 12 months. Our patient presented in the chronic phase with symptoms spanning over 12 months, and painless penile deformity.

Risk factors for PD include age, genetic predisposition, Caucasian descent, trauma from sexual activity or medical procedures, diabetes, smoking, and underlying collagen disorders like Dupuytren contracture [12]-[14]. Dupuytren contracture has been closely associated with Peyronie's disease and is found in up to 20% of cases [12], but our patient had no personal or family history of the above, and he is Black. The risk factor present in our patient was advanced age.

Due to its accessibility, low risk, and capacity to detect and quantify both the

calcified and soft tissue components of PD and the integrity of the penile blood vessels, penile Doppler ultrasound (PSUSG) scan, is the preferred imaging technique [10]. On PDUSG, our patients had fibrocalcific plaques with tunica albuginea and cavernosal tissue involvement, with the calcification implying a stable disease.

Surgical intervention (plication, graft-based, and prosthetic techniques) becomes necessary when plaques are stable (usually takes 6 - 12 months), when conservative therapy fails, or in men whose curvature, hour-glass indentation, or erectile dysfunction severely affects sexual intercourse [9] [11]. The index patient had symptoms spanning over 12 months, had stable plaques and the deformity was significantly affecting sexual intercourse, hence, a graft-based surgical technique (excision of plaques and autologous fascia Lata grafting) was chosen. Autologous grafts, such as fascia Lata, offer advantages of biocompatibility and reduced risk of rejection or infection [1] [9] [15]. Other grafts used in practice include temporalis fascia, tunica vaginalis, penile skin, saphenous vein, cadaveric tissues such as dermis, fascia, pericardium, porcine small intestine submucosa, and synthetic materials such as Gore-Tex and Dacron [11]. However, to date, there are no comparative data to support the superiority of one graft over the other. The exception is with synthetic grafts, which are associated with marked inflammation, fibrosis and graft infection: and are no longer advocated-for, as first-line treatment [2]. Due to risks inherent to surgical management, such as recurrence, new-onset or worsening of erectile dysfunction, the patient was extensively counselled about the procedure and an informed consent was obtained. Postoperative complications include hematoma, wound dehiscence, and graft failure, [11] but our patient experienced none. Moreover, early removal of the Foley catheter postoperatively is consistent with reducing the risk of infection and promoting patient comfort [9] [16]. Our patient had an uneventful recovery postoperatively and was satisfied with the initial outcome of surgery.

We surmise that surgical management with excision of Peyronie's plaques and autologous fascia lata grafting remains a viable and effective approach for patients with severe penile curvature and stable, non-responsive plaques. This case underscores the importance of tailored surgical planning and patient-specific considerations in achieving optimal outcomes. The approach used here demonstrates adaptability in various clinical settings, particularly in resource-limited environments where autologous grafts may be more accessible than synthetic alternatives. Additionally, the findings highlight the potential benefits of this technique across diverse patient demographics, emphasizing the need for individualized care that considers variations in age, ethnicity, and overall health status. Future studies could further explore the long-term outcomes and broader applicability of this surgical approach across different healthcare systems.

4. Pertinent Literature Review on Peyronie's Disease and Treatment Approaches

4.1. Introduction to Peyronie's Disease

Peyronie's disease (PD) is a chronic inflammatory disorder characterized by the

formation of fibrous plaques in the tunica albuginea of the corpora cavernosa, leading to penile curvature, deformities, and sometimes erectile dysfunction (ED). The physical deformity can cause significant sexual disability, impacting both the affected individual and their partner's psychosocial well-being [17].

4.2. Historical Background

PD was first distinguished as a clinical entity by François Gigot de la Peyronie in 1743, though its roots trace back to observations by 16th-century anatomists like Fallopius and Vesalius [14]. Peyronie's work at the French Royal Courts described the condition's hallmark symptoms: penile curvature, pain, and plaque formation. Early understanding suggested the disease could resolve spontaneously, but research by Gelbard *et al.* (1995) and Kadioglu *et al.* (2007) [18] demonstrated low rates of spontaneous resolution (0.65% - 13%) [19] and high rates of progression (30% - 40%), emphasizing the need for treatment [8] [19].

4.3. Prevalence and Epidemiology

The prevalence of PD varies globally, with estimates ranging from 0.4% - 3.2% in the U.S. to 7.1% in Italy [20]. Age is a key factor, with 1.5% of men in their 30s affected, compared to 6.5% in men over 70 [20]. Research in Africa is sparse, but studies suggest racial disparities in PD prevalence, with reports indicating lower incidence in Black men, although these findings may reflect underreporting due to stigma and healthcare access issues [3].

4.4. Risk Factors

Non-modifiable risk factors for PD include advanced age and a genetic predisposition, while modifiable risk factors encompass penile trauma, diabetes, smoking, and connective tissue disorders such as Dupuytren's contracture [14]. These factors are thought to initiate the inflammatory cascade, leading to abnormal wound healing and fibrosis within the tunica albuginea.

4.5. Pathophysiology

PD's underlying pathophysiology involves trauma to the penile tissue, leading to fibrotic plaque formation in the tunica albuginea due to dysregulated wound healing [8]. This reduces tissue elasticity, resulting in curvature, narrowing, and shortening of the penis [1]. In some cases, calcification of the plaques may occur, contributing to sexual dysfunction.

4.6. Psychological Effects

The psychosocial impact of PD is profound, with nearly half of affected men experiencing depression and emotional distress. Up to 81% of men report relational difficulties due to their condition, exacerbating the psychological burden [20]. A PD-specific questionnaire helps assess these psychological effects, guiding therapeutic interventions [6] [21].

4.7. Associations with Erectile Dysfunction

Erectile dysfunction (ED) is reported in 20% - 50% of men with PD and may result from physical impediments to coitus, fibrosis affecting the cavernosal tissues, or psychological factors. Studies [9] [19] observed that 48% of PD patients experienced worsening curvature without intervention, emphasizing the importance of early treatment [11].

4.8. Clinical Presentation

Men with PD typically present with penile curvature, pain during erection, palpable plaques, and sometimes ED [1]. Symptoms can vary in severity, with significant impact on sexual and psychological health.

4.9. Treatment Options for Peyronie's Disease

4.9.1. Non-Surgical Management

Medical therapies aim to reduce symptoms and prevent progression. Oral treatments, such as PDE5 inhibitors, improve erectile function, while intralesional therapies, including collagenase injections, enzymatically degrade plaques. These treatments are best for patients in the early stages or those with mild symptoms [22].

1. Pentoxifylline: Pentoxifylline has shown promise in reducing plaque size and curvature by inhibiting collagen deposition. However, inconsistent study results and side effects, including gastrointestinal discomfort, limit its use [8] [22].

2. Vitamin E: Once widely used, Vitamin E's efficacy remains controversial, with mixed results from clinical trials. The American Urological Association (AUA) offers limited endorsement due to inconsistent evidence [22].

4.9.2. Surgical Management

Surgical intervention is reserved for severe cases or when medical treatments fail. Surgical options are classified into tunica plication, plaque incision with grafting, and penile prosthesis implantation for patients with concomitant ED [15].

1. Tunica Plication: Suitable for patients with curvature less than 60-70 degrees and no complex deformities, this technique shortens the longer side of the penis to correct curvature. Procedures like the Nesbit or 16-dot techniques [21] are effective, with high success rates for straightening (80% - 95%) [11].

2. Plaque Incision or Partial Excision with Grafting: For complex curvatures, incising or removing part of the plaque and placing a graft is recommended. Various graft materials, from autologous tissues to synthetic grafts, have been used, with success rates up to 96% [2]. However, risks include ED (0% - 63%), recurrence of curvature, and penile shortening [18].

3. Penile Prosthesis Placement: In men with PD and ED unresponsive to medical therapy, penile prosthesis implantation can simultaneously address curvature and erectile function. This option offers high patient satisfaction rates but may require additional surgical manoeuvres to correct persistent curvature [1] [19].

4.9.3. Graft Materials

Autologous and synthetic grafts have been used in PD surgeries, with biografts and off-the-shelf allografts preferred for their lower complication rates. Fascia lata grafts harvested from the thigh are also used due to their strength and pliability [23]. The short "S"-shaped incision method for fascia Lata harvesting offers a viable alternative to traditional techniques, combining minimal morbidity with excellent cosmetic results [23].

5. Conclusions

Peyronie's disease is a complex disorder with significant implications for men's sexual health and quality of life. Multidisciplinary management involving urologists, sexual medicine specialists, and mental health professionals is crucial for addressing the physical and psychological aspects of the disease. It is likely underreported; hence, awareness of new, effective treatment options may increase its reported prevalence. Both medical and surgical treatments aim to improve penile deformity, sexual function, and quality of life. Ongoing research is needed to confirm the efficacy of various therapies. Additionally, continued research and collaboration are essential to refine treatment algorithms, enhance therapeutic efficacy, and improve outcomes for patients affected by this challenging condition.

The index patient had plaque excision and tunical patch with autologous fascia lata graft with good post-operative outcomes.

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Informed Consent

This research adhered to the "Regulations of the General Health Law" regarding health research, specifically Title Two, Chapter I, Article 17, Section I. The patient signed a consent form to allow for an anonymised usage of his clinical data and pictographs for the case report.

The study complied with the ethical principles outlined in the "Declaration of Helsinki" by the World Medical Association, adopted at the 52nd General Assembly in Edinburgh, Scotland, in 2000, and further amended in Tokyo in 1975. Although the patient signed a consent form for participation, it is important to note that the institution where the study was conducted does not require ethical clearance for case reports.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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Appendix

CONSENT FORM FOR CASE REPORTS1

For a patient's consent to publication of information about them in a journal or thesis

Name of person described in article or shown in photograph:____________

Subject matter of photograph or article:____________

Title of article: "Peyronie's disease in an elderly Ghanaian gentleman"

Medical practitioner or corresponding author: Dr. Frank Obeng.

I____________ [insert full name] give my consent for this information about MYSELF OR MY CHILD OR WARD/MY RELATIVE [insert full name]: Dr. Frank Obeng relating to the subject matter above ("the Information") to appear in a journal article, or to be used for the purpose of a thesis or presentation.

I understand the following:

1. The Information will be published without my name/child's name/relatives name attached and every attempt will be made to ensure anonymity. I understand, however, that complete anonymity cannot be guaranteed. It is possible that somebody somewhere - perhaps, for example, somebody who looked after me/my child/relative, if I was in hospital, or a relative - may identify me.
2. The Information may be published in a journal which is read worldwide or an online journal. Journals are aimed mainly at health care professionals but may be seen by many non-doctors, including journalists.
3. The Information may be placed on a website.
4. I can withdraw my consent at any time before online publication, but once the Information has been committed to publication it will not be possible to withdraw the consent.

Signed:____________ Date: 25/06/2024

Signature of requesting medical practitioner/health care worker:

____________ Date: 25/06/2024

1 Adapted from *BMJ Case Reports* consent form.
Division Research Development and Support, Faculty of Health Sciences, Stellenbosch University, South Africa. Consent form for case reports. Version1. Sept 2008.