

Giant Benign Prostatic Hyperplasia: Case Report

Otohinoyi David Adeiza^a, Chidambra Dhariwal Halari^b, Moheem Masumali
Halari^{c*}

^aMedical Student, All Saints University School of Medicine, Hillsborough Street, P.o.box 1679, Roseau,
Dominica.

^{b,c}Assistant Professor, All Saints University School of Medicine, Hillsborough Street, P.o.box 1679, Roseau,
Dominica.

^cEmail: moheem.halari@allsaintsu.org

Abstract

One of the most prevalent conditions affecting one-third of men over 60 years, usually presenting with urinary bladder obstruction and hematuria is Benign Prostatic Hyperplasia (BPH). An extremely rare entity of BPH is giant benign prostatic hyperplasia (GBPH) with mass exceeding 500g. This case report concerns an elderly male cadaver received at All Saints University School of Medicine with a GBPH weighing 719g and measuring 21.5 × 16 × 15.5 cm in size and 9cm in diameter. To the best of our knowledge, we report the first largest prostate with prostatic hyperplasia found in a cadaver during dissection.

Keywords: Benign prostatic hyperplasia; Giant benign prostatic hyperplasia; Giant prostatic hyperplasia; Cadaver; All Saints University School of Medicine; Dominica; BPH; GBPH; GPH.

1. Introduction

Typically described as a non-malignant enlargement of the prostate, benign prostatic hyperplasia (BPH) is classified as a rapid proliferation of cells [1]. It is usually associated with elderly men [2], who present with lower urinary tract symptoms (LUTS); such as weak urinary stream, nocturnal micturition, frequent urination and urgency with feeling of unfinished bladder emptying [1, 3, 4]. Analysis of BPH has shown prostate mass rarely exceeding 100g with few exceptions in 4% of men older than 70 years [5].

*Corresponding author.

Giant benign prostatic hyperplasia (GBPH) has been classified as BPH exceeding 500g [2, 5]. GBPH could also be credited to BPH that exceed 200g in regions where BPH occurrence is exceptionally uncommon such as regions in Asia [5]. GBPH is extremely rare with less than 20 occurrence exceeding 500g in medical literature [8]. The largest prostate removed by exploratory laparotomy weighed 2410g which was initially thought to be a retroperitoneal tumor [9]. Few reports have also shown that GBPH has no distinctive symptoms in comparison to BPH, although, the cause that leads to massive prostate enlargement is not entirely understood [2]. This current report presents a case of GBPH of 719g which was found during cadaver dissection.

2. Case report

An 85 year old American male cadaver was received by All Saints University School of Medicine for the sole purpose of medical education and research. From the death certificate, it was noted that the cadaver had been arterially embalmed. The body had been embalmed with 10 gallons of embalming solution consisting of and containing 25% of an 85% phenol solution, 25% of diethylene glycol, 25% of water and 25% of alcohol, 1/3 methanol and 2/3 ethanol. To the above solution 8 ounces of formalin had been added to each 3 gallons of solution. The body had been thoroughly disinfected and all orifices have been packed with a saturated piece of cotton dipped in 37% formalin. The body had also been wrapped in a sheet saturated with disinfectant, namely 37% formalin and 5% of 85% phenol solution. The body had been placed in a 6 mil pouch and sealed. The cause of death stated sepsis since 2 weeks, severe dehydration since 2-3 weeks, seizures since 2-3 weeks.

During a routine dissection the cadaver's prostate was excised, measured and weighed (Figure 1 and 2).

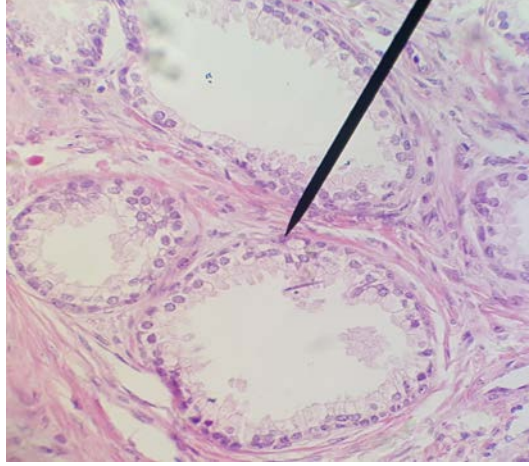


Figure 1: Cross section of dissected prostate

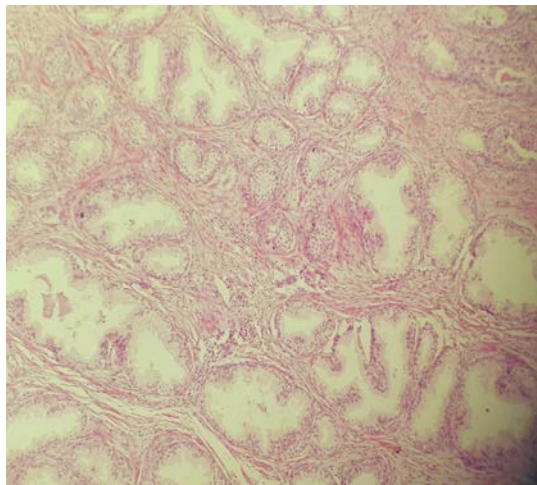


Figure 2: Lateral view of dissected prostate

Measurement of the prostate showed its dimensions for length, breadth and thickness as 21.5cm, 16cm and 15.5cm respectively. Cross section measured a diameter of 9cm. The recorded mass was 719g. Gross inspection revealed a firm, whitish multinodular surface with no sign of induration or necrosis. Microscopy showed glandular and fibromuscular stromal proliferation confirming benign hyperplasia (Figure 3).



A



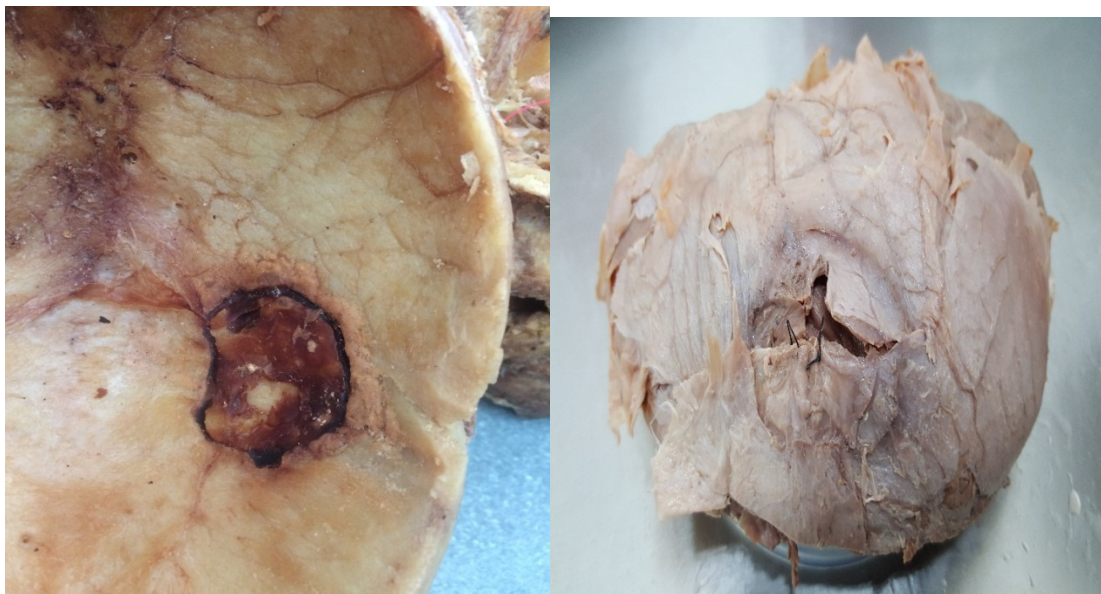
B

Figure 3: Microscopic examination of the prostate specimen at 40X (A) and 10X (B) magnification

Another feature associated with the cadaver was the use of a 1.5mm low profile neurosurgery system (Figure 4). The profile consisted of a 0.3mm burr-hole cover and mesh with a 0.6mm profile plate. The use of this system is usually indicated in craniotomy, cranioplasty and cranial trauma. Careful removal of the calvaria was performed which revealed epidural hemorrhage. The dura mater under the profile plate also exhibited a circular coating of blood clot in the vicinity of a non-absorbable suture material (Figure 5). In addition, the cerebral cortex showed mild hemorrhage that may have resulted from either trauma or during the craniotomy procedure. However, actual reason for these findings is not well understood.



Figure 3: Low profile neurosurgery 1.5mm plates



A

B

Figure 4: Skull showing epidural hematoma (A) and Dura displaying surgical suture (B)

3. Discussion

One of the most prevalent conditions experienced by aging males presenting with bladder outlet obstruction and hematuria is BPH [8]. GBPH has been defined as a prostate weighing 500g or more [2]. There have been very few cases of GBPH weighing more than 500g and only nine exceeding 700g (Table 1). Our case report presents as the first largest prostate reported from a cadaver during dissection in medical literature. This report also

constitutes as the eight largest in medical literature and also the first recorded case involving an American.

The pathogenesis of GBPH has not been fully understood. It has been suggested that there is a combined effect of disruption in normal stromal-epithelial paracrine signaling and an imbalance between androgenic, cytokine and peptide growth [2]. This signals a reduction in apoptosis leading to proliferation in stromal and epithelial cells resulting in significant prostate enlargement [2]. It has been found that specific mutations of RAS, c-erbB2 protooncogenes and downregulation of tp53 tumor suppressor gene can promote abnormal cellular proliferation [2].

Signs and symptoms such as acute or chronic urinary retention, recurrent macroscopic haematuria, urinary tract infection, renal insufficiency, urinary bladder stones or severe lower urinary tract symptoms not responding to medical treatment are indications in BPH for surgical intervention [8]. It is appropriate to assume that GBPH could have initiated the urinary obstruction that lead to sepsis and its complication such as seizures [9, 10]. The seizure that was reported for 2-3 weeks may have resulted in the patient to fall leading to a depressed fracture of the right parietal bone. The fracture would possibly have ruptured a branch of the right middle meningeal artery leading to epidural hematoma followed by a craniotomy intervention. The fact whether the GBPH was diagnosed during the patient’s medical routine is unknown.

Table 1: GBPH exceeding more than 700g in medical literature

No.	Author(s)	Country/Race	Year	Weight (grams)	Journal published
1	Medina-Peres et al	Spanish	1997	2,410	Arch Esp Urol
2	Tolley	Caucasian	1987	1,058	J R Soc Med
3	Ockerblad	Unknown	1946	820	J Urol
4	Wang et al	Australia	2016	800	Asian J Urol
5	Maliakal et al	Oman	2014	740	Sultan Qaboos Uni Med J
6	Ucer	Turkey	2011	734	Dicle Med J
7	Nelson	Unknown	1940	720	Urol Cutan Rev
8	Current case	America	2016	719	
9	Gilbert	Unknown	1939	713	Urol Cutan Rev
10	Wadstein	Unknown	1938	705	JAMA

4. Conclusion

GBPH is a rare finding in the pathology of the prostate. The case report presented here constitutes the first heaviest prostate reported from a cadaver in medical literature to date. We report a dissected GBPH weighing 719g and measuring 21.5 x 16 x 15.5 cm (L x B x W) and 9cm in diameter. This prostate also constitutes as the 8th largest in literature and the first reported case of GBPH in North America.

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