

## Urological Management of Placenta Percreta A five year Review

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### ABSTRACT

**Background:** Placenta Percreta is a type of adhesive placental disorder. Adhesive placenta include placenta accrete, placenta increta and placenta percreta. Placenta accreta occurs 1 in 2500 pregnancies of which only 5% are Placenta Percreta. In placenta percreta, the chorionic villi penetrate the uterine wall and serosa and attach to the surrounding organs like urinary bladder, rectum and ureter.

**Aim:** To find a preferred urological management strategy for placenta percreta and to find various aspects of care to improve outcome.

**Study design:** Randomized Controlled Clinical Trial.

**Methodology:** We included 80 cases of placenta percreta from 15-02-2014 to 14-02-2019 (5 years). All cases presented in Gynecology & Obstetric Units of Jinnah hospital Lahore.

**Results:** Mean age was 30 years, age range was 20-38 years. All patients were multiparous. 63 (78.7%) Patients were diagnosed at the time of surgery. Only 17(21.25) cases were diagnosed before surgery. Gross Haematuria presented in 29 cases (36%). Cesarean Hysterectomy was done in 71 cases (88.75%). Urinary bladder injury seen in 69 cases (86.25%). Partial posterior bladder wall resection was done in 21 cases(26.25%). 76 (95%) cases needed more than 4 units of blood. 9 cases (11.2%) had B/L ureter injury . 11 (13.75%) later on developed VVF. 41 cases (51.2%) required unilateral Internal Iliac Artery Ligation and 11 (13.75%) cases needed bilateral Internal Iliac Artery Ligation. 11(13.75%) cases bladder was not opened to secure bleeding.

**Conclusion:** Placenta Percreta, although rare, is an alarming life threatening obstetrical emergency. When Urinary bladder is involved, a multidisciplinary approach involving urologist, obstetrician/Gynecologist, general surgeon, interventional radiologist, Intensive care unit & transfusion medicine is key to success. Attempt must be made to make an antenatal diagnosis, to decrease blood loss and preserve bladder integrity. Evidence based guidance for management of such patients is needed from continuing studies. All Tertiary Health care facilities should develop a management protocol for such patients to decrease morbidity & mortality.

**Keywords:** Placenta percreta, chronic villi, pregnancy.

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### INTRODUCTION

Placenta Percreta is type of abnormal Placentation. Abnormal Placentation is a major cause of maternal morbidity & mortality all over the world<sup>2</sup>. It was first described by Irving & Herting in 1937. Abnormal Placentation is classified into three types according to the degree of its penetration. The most common type is Placenta accrete (75-78%) in which placental villi attach directly to myometrium as there is absence of decidua basalis and incompletely developed fibrinoid layer. Placenta increta (17%) is second most common type, here placental villi penetrate through the myometrium and finally is the placenta percreta which is least common and accounts for 5-7%, here the villi get attached to the surrounding pelvic organs after penetration through the uterine wall and serosa. Pathologically, there is defect in trophoblastic function, basalis defect due to failure of normal decidualization and there is abnormal vascularization and tissue oxygenation of scar tissue<sup>3</sup>. The most common site of attachment of placenta outside the uterus is the urinary bladder<sup>4</sup>. Exact cause of placenta percreta is not known, however it is associated with several clinical conditions like cesarean delivery, placenta previa,

grand multiparity, suture of uterine perforation, infection, previous Dilatation & Curettage, myomectomy & Asherman Syndrome, that is scarring within the uterine cavity. Maternal age & smoking are other risk factors<sup>5</sup>. Incidence is increasing in developed countries<sup>6</sup>. Placenta accreta occurs 1 in every 2500 pregnancies & only 5% are Placenta percreta. About >5% cases of Placenta percreta are associated with Placenta Previa<sup>7</sup>. Placenta Percreta is becoming the foremost cause of obstetric hemorrhage & post partum hysterectomy needing poly transfusion & development of Disseminated Intravascular Coagulation, cystostomy, fistula formation, ureteral stricture, intensive care admission, prolonged hospitalization, adult respiratory distress syndrome, renal failure, septicemia and even death. Wherever feasible cesarean hysterectomy still remains the gold standard in the management of placenta Accreta, however, an elective second step or delayed hysterectomy, especially in cases of placenta percreta, is safer, technically easier, with favorable dissection planes, & results in less blood loss<sup>8</sup>. The majority of the women with Placenta Percreta require a hysterectomy although successful conservative management has also been documented. There is currently inadequate data to endorse this conservative approach<sup>9</sup>.

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## MATERIAL & METHODS

The study was a joint venture of Gynecology/Obstetrics & Urology Department of Jinnah Hospital, Lahore. 80 cases of Placenta Percreta from 15-02-2014 to 14-02-2019 were included in the study. Detailed history & examination was done. All routine investigations were carried out. Post operative cystogram was done in all cases of bladder repair. Foley's Catheter was removed at 4<sup>th</sup> week. DJ stent were removed at 6 to 8 weeks. Arrangements of bed in intensive care unit were made. Detailed preoperative counseling with the patient, husband & other family members was taken into account in all cases. Urological follow up was on daily basis or alternative days after surgical intervention. The bladder was repaired in two layers with vicryl 2/0 over a wide bore catheter. Internal iliac arteries were ligated in continuity.

## RESULTS

The mean age was 30 years & age range was 20-38 years. Most of the patients fall in age group of 25 to 38 years. None of the patients were primary gravida. All women were multiparous & have had previous cesarean deliveries. Gross Haematuria was seen in 29(36%) cases. 63(78%) cases were diagnosed at the time of surgery. Most of the cases were referred from primary & secondary or other private hospitals from the peripheral areas to the Teaching Hospitals. Only 17(21.25%) cases were diagnosed before surgery. Amongst these, 14(17.5%) cases were registered at Teaching Hospitals & 3(3.75%) cases were from peripheral hospitals. Table no. 1 shows the modalities used

to diagnose placenta percreta. Cesarean hysterectomy was the most common surgical procedure performed in 71(88.75%) cases. Injury to urinary bladder was found in 69 (86.25%) cases. Urinary bladder was found to be the most common organ to be injured in such cases. 48 (60%) cases needed simple double layered bladder & remaining 21 (26.25%) cases required partial resection of the posterior bladder wall. 21 (26.25%) cases had unilateral ureteric injury where as bilateral ureteric injury was seen in 9 (11.25%) cases. The most common part of the ureter to be injured was the distal 1/3<sup>rd</sup>. 41(51.25%) cases required unilateral ligation of internal iliac arteries where as bilateral ligation of internal iliac artery was required in 11 (13.75%) cases. Table 2 Shows the procedures performed in our study. Preoperative stenting was done in 21 (26.25%) cases. 76 (95%) cases required more than 4 units of blood transfusion. Maternal mortality occurred in 15 (18.75%) cases, the main cause of death was massive blood loss & disseminated intravascular coagulation. Fetal death occurred in 13 (16.25%) cases. 9 (11.25%) cases were managed conservatively. In 6 (7.5%) cases, methotrexate was used in dose of 1mg/kg body weight. Re-exploration was done in 18 (22.5%) cases.

Table1: Diagnostic Modalities used in diagnosis of placenta percreta.

Modality	Cases	%age
Ultrasound	80	100
Color Doppler	71	88.75
MRI	63	78.75
Cystoscopy	21	26.25

Table 2: Surgical procedures used in management of Placenta Percreta.

Cesarean Hysterectomy	Urinary Bladder Repair	Internal Iliac Artery Ligation	Partial Resection of Bladder	Pre-Operative DJ Stenting	Ureteric Reimplantation
71	69	52	21	21	09

## DISCUSSION

Although overall incidence of Placenta Percreta is extremely low, but the occurrence of this disorder seems to be increasing due to increased number of cesarean deliveries in the past few years<sup>10</sup>. The exact incidence is difficult to determine as the degree of penetration of placenta is not always established however many centers conducted their own case control studies to evaluate the incidence of placenta percreta<sup>11</sup>. High index of suspicion is needed to establish the diagnosis of Placenta Percreta. Painful vaginal bleeding in third trimester, continuous dull lower abdominal pain during pregnancy, a multiparous pregnant woman with previous history of Placenta Previa, a coexistent Haematuria, all give clue towards the diagnosis of Placenta percreta. Gross Haematuria, surprisingly, is rare even when the bladder is invaded & occurs in 25% of such cases<sup>12</sup>. In our study gross Haematuria was in 36% cases. Investigation used in diagnosis of Placenta Percreta are ultrasonography, 3D color Doppler, Contrast enhanced MRI & cystoscopy. Ultrasound has 77-93% sensitivity & 71-97% specificity. On grayscale ultrasound exam in first trimester, a low lying gestational sac attached to a uterine scar & thin myometrium in scar area can be found. During 2<sup>nd</sup> and 3<sup>rd</sup> trimester ultrasonography may reveal thin

myometrium, lack of decidual layer, multiple placental lakes also called Swiss Cheese appearance and an irregular border between myometrium and urinary bladder<sup>13</sup>. Three-Dimensional color flow Doppler is supportive to ultrasound findings showing turbulent blood flow extending from placenta surrounding tissue<sup>14</sup>. MRI using gadolinium I/v contrast will show beading nodularity inside the placenta and there may be mass effect of placenta extending to the surrounding structures<sup>15</sup>. Cystoscopy may be used to reveal the posterior bladder wall involvement. Biopsy or fulguration of posterior wall should be avoided<sup>16</sup>. CT & x-rays are not recommended because they expose the fetus to radiation.

Placenta Percreta is often asymptomatic antenatally & the diagnosis is only established per operative after unsuccessful attempts to remove the placenta. The most important complication of invasive Placentation is massive hemorrhage. This is often as a result of attempted manual Placentation separation from its poorly formed decidual bed, which opens large caliber spiral vessel & sinuses<sup>17</sup>. Therefore manual removal of densely adherent placental tissue should not be attempted as it may result in massive hemorrhage. In our study, out of 80 cases preoperative diagnosis was made only in 17 (21.25%) cases. The approach most often recommended in situation of Placenta

Percreta is hysterectomy. However hysterectomy is not always safe, there is increased risk of not even significant hemorrhage, but also iatrogenic injury to urinary bladder & gastrointestinal tract & also there is loss of fertility<sup>18</sup>. In our review cesarean hysterectomy was done in 71 (88.75%) cases. The emergency cesarean hysterectomy is the most common obstetric surgical approach for the management of placenta percreta. At developed centers where preoperative diagnosis of placenta percreta has been established, pre operative cannulation or balloon embolization of internal iliac arteries can be performed to control intraoperative bleeding. It involves insertion of balloon catheters prior to the delivery via femoral artery up towards internal iliac artery. Once the balloons are placed, they can be inflated to causing temporary occlusion of the internal iliac artery followed by a cesarean section reducing blood loss<sup>19</sup>. Prophylactic internal iliac artery embolization can also be done, even embolization of uterine arteries can be carried out. However arterial embolization is not free of potential risk e.g. developing bladder ischemia, sepsis & pelvic abscess formation<sup>20</sup>. In our study we were not equipped to carry out balloon occlusion or embolization even in a single case. However we managed with ligation of Internal Iliac artery in 52(65%) cases to control hemorrhage and we found this to be an effective method in our health care facility. Hemorrhage is major concern in placenta percreta. In our review 76 (95%) cases needed more than 4 pints of blood. We transfused one pint of FFP after every 3 units of packed cells. After every 10 units of packed RBC's, we transfused platelets. Outcome is better when a higher ratio of FFP & platelets to packed cells maintained. Preoperative ureteric stenting can be done and it decreases the chances of ureteric injury from 7 to 0%. In our review, we did preoperative DJ stenting in 21 cases (26.25%), & ureteric injury was seen in cases where stenting was not done. In our review we did partial resection of posterior bladder wall involved in placenta percreta in 21 (26.5%) cases. Even resection of the bladder base with distal ureters has been quoted in the literature but it is associated with more short and long term complications. Aim is to preserve the bladder integrity<sup>21</sup>. Bladder cystostomy is recommended as it can detail the extent of the invading placenta and aid the surgeon in defining the dissection pattern<sup>22</sup>. In our review, we have to open the bladder or the bladder was opened by gynecologist already in 69(86.25%) cases. In conservative management, we have option to leave the placenta in place and wait till either it is spontaneously resorbed or expelled out. Over sewing of placental vascular bed and uterine compression sutures with or without packing are other options. Leaving placenta in-situ is not free from side effects. It may be associated with intrauterine infection, vaginal bleeding and even sepsis. Methotrexate is used to prompt the process of placental resorption or involution as it acts on rapidly dividing trophoblastic cells<sup>23</sup>. In our study we managed 6(7.5%) cases conservatively with methotrexate. Methotrexate is an immunosuppressive agent that acts via inhibition of DNA synthesis of rapidly dividing trophoblastic cells with dose of 1mg/kg body weight<sup>24</sup>. Out of these 6 cases re-exploration was done in 4 cases to remove the compression packing. The potential benefit of fertility sparing approach should be weighed

against the awaited risks & the possibility of recurrence of placenta percreta in such women<sup>25</sup>. In our review maternal mortality was in 15 cases (18.75%). In literature maternal mortality ranges from 7 to 22%. Main cause is hemorrhage & disseminated intravascular coagulation<sup>23</sup>. The fetus is also at risk in such cases. The main newborn complications are prematurity & low birth weight. Serial Beta HCG levels were monitored in such cases to observe the placental involution. Fetal mortality is variable depending upon facilities available at the center. However in our study perinatal mortality was 10%, 34 weeks of gestation have been associated with optimal fetal outcome<sup>26</sup>. In our study re-exploration was needed in 18 cases (22.5%). Out of these 18 cases, 4 cases were being managed conservatively. The reason for re-exploration was either to remove the packing placed at the initial surgery or to control hemorrhage.

## CONCLUSION

Placenta percreta is a life threatening condition. Its incidence is increasing due to an increase in number of cesarean deliveries. It is a cause of potential massive bleed. Its management is always a challenge & not a one man or a single department show. A multidisciplinary approach is key to a successful outcome. Every attempt should be made to make an antenatal diagnosis. In spite of these modalities, a high index of suspicion is needed. Preoperative counseling with the patient, husband and other family members is very important in making management decisions. Primary & Secondary health care units must refer such cases well in time to tertiary health care units. Each tertiary health care unit must develop a management protocol for placenta percreta cases. It would be better if the concerned doctors from primary & secondary health care units should get formal training regarding early diagnosis, emergency management & in time referral to a Tertiary care units. In our country, in tertiary care units, the role of interventional radiologists is the need of the time in such cases. In every management, efforts should be made to minimize blood loss and preserve bladder integrity to decrease morbidity & mortality & increase outcome.

## REFERENCES

1. Konijeti R, Rajfer J, Aaskari A. Placenta percreta and the urologist. *Rev Urol*. 2009;11;173-176. [PMC free article] [PubMed]
2. Heron M, Hoyert DL, Murphy SL, Xu J, Kochanek KD, Tejada-Vera B. Deaths: final data for 2006. *Natl Vital Stat Rep* 2009;57:1-134.
3. Clausen C, Lonn L, Langhoff-Ross J. Management of placenta percreta: a review of published cases. *Acta Obstet Gynecol Scand*. 2014;93:138-143. [PubMed]
4. Wright JD, Pri-Paz S, Herzog TJ, Shah M, Bonanno C, Lewin SN, et al. Predictors of massive blood loss in women with placenta accreta. *Am J Obstet Gynecol* 2011;205:38e1-6.
5. Royal College of Obstetricians and Gynaecologists. Placenta praevia, placenta praevia accreta and vasa previa: diagnosis and management. Green-top Guideline No. 27. January 2011. [www.rcog.org.uk/files/rcog-corp/GTG27PlacentaPraeviaJanuary2011.pdf]. Accessed 11 August 2013.

6. Belfort MA. Placenta accreta. *Am J ObstetGynecol* 2010;203:430–9.
7. Abbas F, Talati J, Wasti S, et al. Placenta percreta with bladder invasion as a cause of life threatening hemorrhage. *J Urol*. 2000;164:1270–1274. [[PubMed](#)] [[Google Scholar](#)]
8. Guleria et al. *ActaObstetGynecolScand* 2013;92:461-04.
9. Guleria K, Gupta B, Agarwal S, Suneja A, Vaid N, Jain S. Abnormally invasive placenta: changing trends in diagnosis and management. *ActaObstetGynecolScand* 2013; 92(4): 461-4.
10. Hudon L, Belfort MA, Broome DR. Diagnosis and management of placenta percreta: a review. *ObstetGynecolSurv*. 1998;53:509–517. [[PubMed](#)] [[Google Scholar](#)]
11. Sumigama S, Itakura A, Ota T, Okada M, Kotani T, Hayakawa H, Yoshida K, Ishikawa K, hayashi K, Kurauchi O, Yamada S, Nakamura H, Matsusawa K, Sakakibara K, Ito M, Kawai M, kikkawa F. Placenta previalncreta/percreta in Japan: a retrospective study of ultrasound findings, management and clinical course. *J obstetGynaecol Res*. 2007;33:606-611. [[PubMed](#)]
12. Takai N, Eto M, Sato F, et al. Placenta percreta invading the urinary bladder. *Arch Gynecol Obstet*. 2005;271:274–275. [[PubMed](#)] [[Google Scholar](#)]
13. Yang JI, et al. Sonographic findings of placental lacunae and the prediction of adheret placenta in women with placenta previatotalis and prior cesarean Section. *Ultrasound Obstet Gynecol*. 2006;28:178-182. [[PubMed](#)]
14. Shih JC, Lim YK, Kim HS, Chang KH, Lee JP, Ryu HS. Role of three-dimensional power Doppler in the antenatal diagnosis of placenta accreta: comparison with gray-scale and color Doppler techniques. *Ultrasound Obstet Gynecol*. 2009;33:193–203. [[PubMed](#)]
15. Levine D, Hulka CA, Ludmir J, Li W, Edelman RR. Placenta accreta: evaluation with color Doppler US, power Doppler US, and MR imaging. *Radiology*. 1997;205:773–776. [[PubMed](#)]
16. Takai N, Eto M, Sato F, Mimata H, Miyakawa I. Placenta percreta invading the urinary bladder. *Arch Gynecol Obstet*. 2005;271:274–275. [[PubMed](#)]
17. Lam H, Pun TC, Lam PW. Successful conservative management of placenta previaaccreta during cesarean section. *Int J GynaecolObstet* 2004; 86:31–32.
18. O'Brien JM, Barton JR, Donaldson ES. The management of placenta percreta: conservative and operative strategies. *Am J ObstetGynecol* 1996; 175:1632–1638.
19. Bodner LJ, Nosher JL, Gribbin C, Siegel RL, Beale S, Scorza W. Balloon-assisted occlusion of the internal iliac arteries in patients with placenta accreta/percreta. *CardiovascInterventRadiol*. 2006;29:354–361. [[PubMed](#)]
20. Chou MM, Hwang JI, Tseng JJ, Ho ES. Internal iliac artery embolization before hysterectomy for placenta accreta. *J VascIntervRadiol*. 2003;14:1195–1199. [[PubMed](#)]
21. Price FV, Resnik E, Heller KA, Christopherson WA. Placenta previapercrta involving the urinary bladder: a report of two cases and review of the literature. *Obstet Gynecol*. 1991;78:508–511. [[PubMed](#)] [[Google Scholar](#)]
22. Matsubara S, Ohkuchi A, Yashi M, Izumi A, Ohwada M, Kuwata T, Usui R, Kuwata Y, Nakata M, Suzuki M. Opening the bladder for cesarean hysterectomy for placenta previapercrta with bladder invasion. *J ObstetGynaecol Res*. 2009;35:359–363. [[PubMed](#)]
23. Doumouchtsis SK, Arulkumaran S. The morbidly adherent placenta: an overview of management options. *ActaObstetGynecol* 2010; 89(9): 1126-33.
24. Hays AM, Worley KC, Roberts SR. Conservative management of placenta percreta: experiences in two cases. *Obstet Gynecol*. 2008;112:425–426. [[PubMed](#)]
25. Washecka R, Behling A. Urologic complications of placenta percreta invading the urinary bladder: a case report and review of the literature. *Hawaii Med J* 2002; 61(4): 66-9.