The abnormal attachment of chorionic villi to myometrium with the absence of a normal cleavage plane is called placenta accreta and has 3 degrees of severity: 1) placenta accreta vera in which the villi are directly juxtaposed to the myometrium but do not actually invade, 2) placenta increta in which the villi invade the myometrium but not the serosa and 3) placenta percreta in which the villi penetrate the myometrium completely.

All degrees of placenta accreta are thought to be caused by a local absence of the decidua basalis which normally poses a barrier to placental invasion. This defect is frequently associated with previous cesarean sections or uterine trauma, endometritis or dilatation and curettage.

Placenta accreta vera and placenta increta lead to incomplete placental removal after birth, often with persistent postpartum bleeding. Placenta percreta with rupture of the uterus at any time during the pregnancy is one of the most urgent obstetric catastrophes and results in massive blood loss and high mortality.

Placenta percreta directly invading the bladder has never been reported in the urological literature and we know of only 2 documented cases in the English literature.

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*Requests for reprints: Department of Surgery, Section of Urology, University of Michigan Medical Center, Ann Arbor, Michigan 48104.


Microscopic examination of tissue removed from inside the bladder disclosed mature placenta with well formed chorionic villi and fragments of necrotic smooth muscle with decidua on 1 surface (fig. 2). Within the endometrium there was abundant degenerating decidua. Sections along the anterior uterine defect showed a layer of necrotic chorionic villi and entrapped decidual cells extending to the serosal surface of the uterus (fig. 3).

The postoperative course was turbulent. Atelectasis and poor ventilation related to prolonged anesthesia were treated with a nasotracheal tube and ventilator for 4 days. The packs in the bladder and vagina were removed 3 days postoperatively. The urine remained relatively clear and was allowed to flow freely from the stoma. There was persistent sepsis and fever between 102 and 104°F, right upper quadrant fullness and tenderness and an indurated large non-fluctuant pelvic mass. Blood culture yielded Escherichia coli and Pseudomonas. IVP demonstrated no change. An unusual form of disseminated intravascular coagulopathy developed with normal platelet counts but severely prolonged prothrombin time and partial thromboplastin time. However, this was controlled with intravenous heparin.

At 9 days postoperatively upper gastrointestinal bleeding developed that required 3 units of blood during 12 hours. The patient underwent pyloroplasty and vagotomy. Multiple eroded areas typical of a stress ulcer were noted. A thickened inflamed gallbladder was noted and a cholecystostomy was performed. Purulent collections were noted in the lower abdomen and pelvis and these were drained.

The patient did well and heparin was discontinued without recurrence of coagulopathy. The vesicostomy tract healed 4 weeks later and drains were slowly advanced and removed. The patient was moderately febrile until this time but eventually she remained afebrile without antibiotics. She voided well and the urine was uninfected. An a cholecystogram revealed complete obstruction of the cystic duct by a 1 cm. non-opaque gallstone. Three months later she underwent an uneventful cholecystectomy.

**DISCUSSION**

The reported incidence of placenta accreta varies from 1 in 2,000 pregnancies to none in 70,000 pregnancies. This discrepancy is probably owing to the fact that microscopic examination of the placenta after manual removal is not routinely done and the diagnosis is often overlooked.

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Since Irving and Hertig's classic study of 18 cases, prompt hysterectomy has generally been considered the safest way to manage placenta accreta vera or placenta increta. They reported a 66 per cent mortality if manual extraction was performed or if the placenta was left in after delivery. They had no mortality with prompt hysterectomy. However, McKeough advocated more conservative management of placenta accreta (as one would manage an abdominal pregnancy). This included leaving the placenta in the uterus after delivery, treatment with antibiotics and performing hysterectomy only if bleeding persisted.\textsuperscript{13}

There is less controversy regarding aggressive

management of uterine rupture. Since 1900 fewer
than 40 cases of uterine rupture from placenta
percreta have been reported. In all cases of uterine
rupture from placenta percreta not associated
with bladder invasion, prompt laparotomy was
performed for an acute abdomen and hysterecto-
my was not technically difficult. Decidua ba-
salis was lacking and previous cesarean sections
or dilatation and curettage were implicated as a
cause in most instances. 2, 8, 7, 6, 11

There are only 2 documented cases of placenta
percreta with bladder invasion. Both cases mani-
fested at a much earlier stage of pregnancy than
our case and operative management was simpler.
One case was reported as "an example of initially
inadequate diagnostic pursuit of a rare
involvement". 8 The patient had a history of 6
cesarean sections. She had gross hematuria and
mild lower abdominal pain in the fourth month of
pregnancy. Although she required 11 pints of
blood, an IVP was normal and the urine cleared
after all clots were removed from the bladder.
Cystoscopy initially revealed no source of bleeding
and the pelvic examination was normal for a
4-month pregnancy. Cystoscopy was done again
for recurrent bleeding and biopsy of a granular
lesion at the dome of the bladder produced
massive bleeding. Only at laparotomy was the
diagnosis made and the patient was managed with
10 units of blood, cesarean section, hysterectomy
and segmental bladder resection. The placenta
was attached to the old cesarean section scar in
the lower uterine segment and invaded the bladder
posteriorly.

The other case of placenta percreta with blad-
der invasion was heralded by dysuria and gross
hematuria in the sixteenth week of pregnancy in a
patient with 4 previous cesarean sections. 10 Cy-
storoscopy revealed an "exophytic growth" on the
posterior wall and trigone. Laparotomy revealed
invasion of the placenta into the posterior bladder
wall. A large blood clot (1,000 cc) was removed
from the bladder but no active bleeding was
found. A subtotal hysterectomy was performed
with an uneventful recovery. Microscopic exami-
nation demonstrated invasion of uterine muscle
by trophoblastic cells and chorionic villi in the
bladder.

In our patient initial cystoscopy and IVP were

normal. The advanced pregnancy of 7 months
made it difficult to justify termination and hys-
terectomy although the correct diagnosis was
suspected. The good results obtained initially by
fulguration of the bleeding point on the posterior
wall of the bladder caused us to underestimate
the severity of uterine penetration and produced hope
that cesarean section could be delayed until a
viable infant was possible.

It is clear now that in these cases temporizing
can be disastrous and that early interruption of a
pregnancy is essential. Wilson and associates
reported that surgical patients who require trans-
fusion of more than 25 units of blood in 24 hours
have a mortality rate of 95 per cent. 18 It is possible
that at an earlier stage of pregnancy, the placenta
could have been left in place and treated as in an
abdominal pregnancy. Even in the absence of that
alternative, with earlier operative intervention we
might have found less massive placental attach-
ment to surrounding structures and a simpler
procedure with less morbidity would have been
possible.

The presence of a normal decidual layer in our
patient is contrary to other reports. The previous
cesarean sections may have resulted in a defect in
the entire uterine wall rather than in the decidua
basalis only, especially if portions of bladder had
been inadvertently included in the uterine suture
line. However, the absence of incontinence or
cyclic hematuria prior to this pregnancy weighs
against a true vesicocutaneous fistula. 14, 17 The
presence of intact decidua basalis weakens previ-
ous assumptions that placenta percreta is caused
simply by absence of a barrier layer of decidua.

SUMMARY

A rare case of placenta percreta invading the
bladder wall is reported. When hematuria occurs
during pregnancy in a patient with a previous
cesarean section, placenta percreta should be
suspected. Aggressive management of this condi-
tion is recommended. Histologic data are pre-
sented to question the concept that placenta
percreta is caused simply by a defect in the
decidua basalis.

14 Wilson, R. F., Bassett, J. S. and Walt, A. J.: Five
years of experience with massive blood transfusions.
15 Youssef, A. F.: "Menouria" following lower segment
16 Falk, H. C. and Tancer, M. L.: Management of
vesical fistulas after cesarean section. Amer. J. Obst.