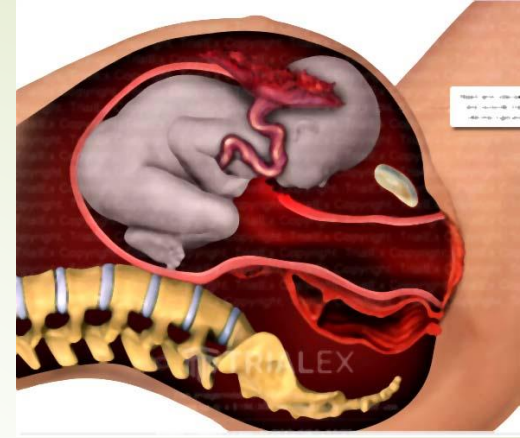


WELCOME



OBSTETRICAL CATASTROPHE





Obstetrical catastrophe; Rupture uterus-incidence, risk factors, fetomaternal outcome and management in Ad-din Women's Medical College and Hospital, Dhaka.

DR. RAHIMA KHATUN

Associate Professor

Ad-din Women's Medical College and Hospital

INTRODUCTION

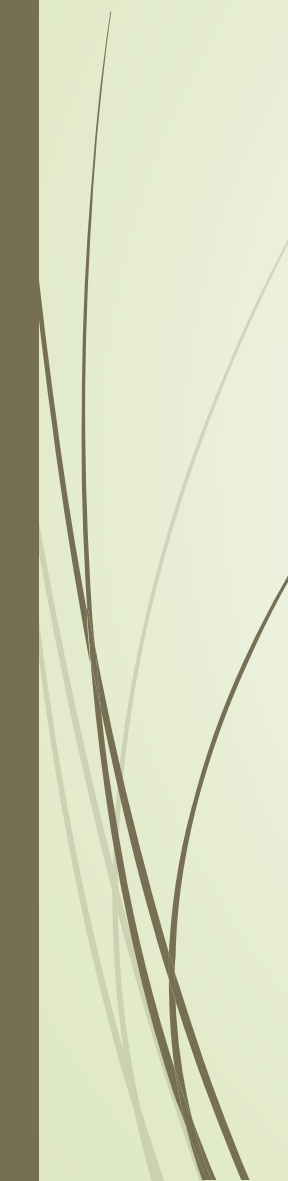
- Disruption in the continuity of the all uterine layers (endometrium, myometrium and serosa) any time beyond 28 weeks of pregnancy is called rupture of the uterus.
- Whereas improved obstetrics care reduces the rupture from obstructed labour but there has been increased prevalence of scar rupture following increased incidence of caesarian section over the year . The prevalence widely varies from 1 in 2000 to 1 in 200 deliveries.¹
- Incidence of between 0.36 to 2.44% were reported in Nigeria, Ethiopia, Pakistan and from a study in Senegal and Mali.⁵⁻⁹

Con...

The sign and symptoms of uterine rupture, largely depending on-

- Timing, site and extent of uterine defect
- Severe haemorrhage
- Palpable fetal parts, recession of presenting fetal parts
- Loss of uterine contractility
- And rarely blood stained urine, appearance of placenta at vulva and prolapsed of loops of gut into vagina.¹¹

Surgical treatment is depends on the –

- Severity and extent of the rupture
 - Hemodynamic status of the mother
 - Future fertility desire and
 - Surgeon experience
- 

OBJECTIVE

To determine-

- **Incidence**
- **Risk factors**
- **Maternal and fetal outcome and**
- **Management of uterine rupture in Ad-din
Women's Medical College and Hospital, Dhaka.**

MATERIAL AND METHODS

- **Study design: Prospective observational study.**
- **Duration: From July 2022 to June 2023**
- **Sample size: 45 patient**
- The data was collected from the labour ward and operation theatre registers book as well as from the patient's case files.
- Mostly referred case and a few delivered in hospital were studied.

RESULTS

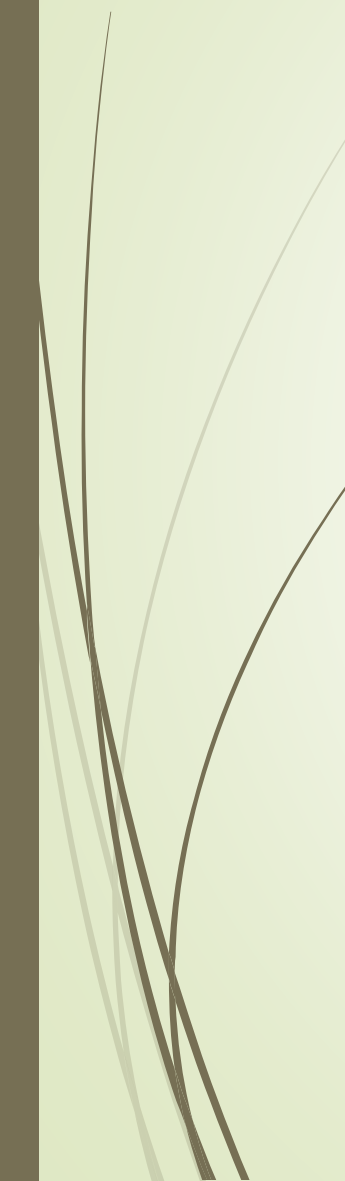
- ▶ During this period number of total deliveries were 17,288.
- ▶ Among them rupture uterus was found 45 cases.
- ▶ **Prevalence of ruptured uterus was 0.26%.**

Table 1: Socio-demographic factor

Age	No of patients (45)	Percentage %
16 -<20 years	0	
20-<30 years	18	40%
30-35 years	23	51.1%
>35-40 years	4	8.9%
Parity		
Para-1	15	33.3%
Para-2	25	55.6%
Para-3 or more	5	11.1%
Antenatal care		
Regular	17	37.8%
Irregular	28	62.2%



Con...



Out of 45 cases, most of the patient were 23 (51.1%) between the age of 30-35 years, majority of the patient (25) have two children, **most of the patient 28 (62.2%) had irregular antenatal check up.**

Table 2: Risk factor

Risk factor	No of patients (45)	Percentage%
Obstructed labour	3	6.7%
Induction of labour	5	11.1%
Rupture of the previous scar	37	82.2%

In this study, most of the patient 37 (82.2%) had history of previous caesarian section. Induction of labour was done only 5 patients.

History of C/S

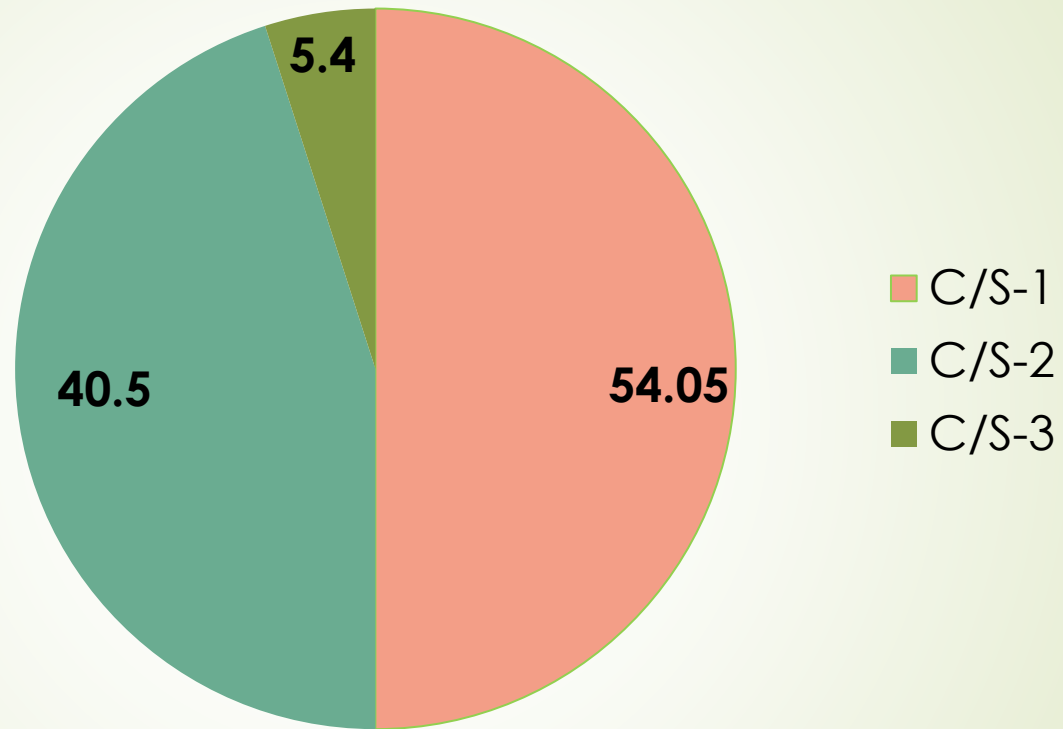


Fig 1: Shows 20 patients (54.05%) had history of previous C/S-1, only 5.4% cases had history of previous C/S -3 or more.

Gestational age

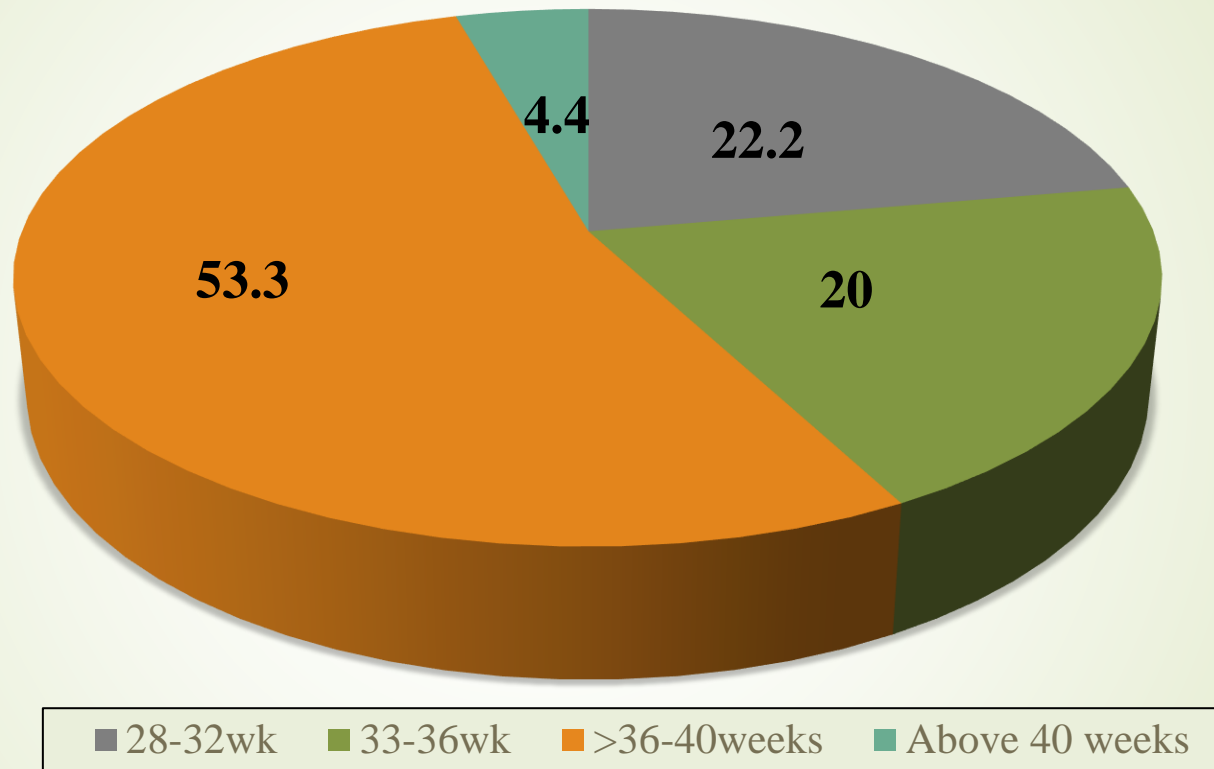


Fig 2: Shows that Maximum **24(53.3%)** rupture of the uterus was found **>36-40 weeks**. Among them only 2(4.4%) rupture of the uterus was found >40 weeks.

Table 3: Per –operative finding

Per-operative	No of patients (45)	Percentage%
Haemoperitoneum		
Present	36	80%
Absent	9	20%
Site of rupture		
Only scar rupture	8	17.8%
Rupture extension to lower segment	17	37.8%
Extension to upper segment	12	26.7%
Extension up to the broad ligament	2	4.4%
Injury to urinary bladder	4	8.9%
Not explored due to death	2	4.4%



Con...

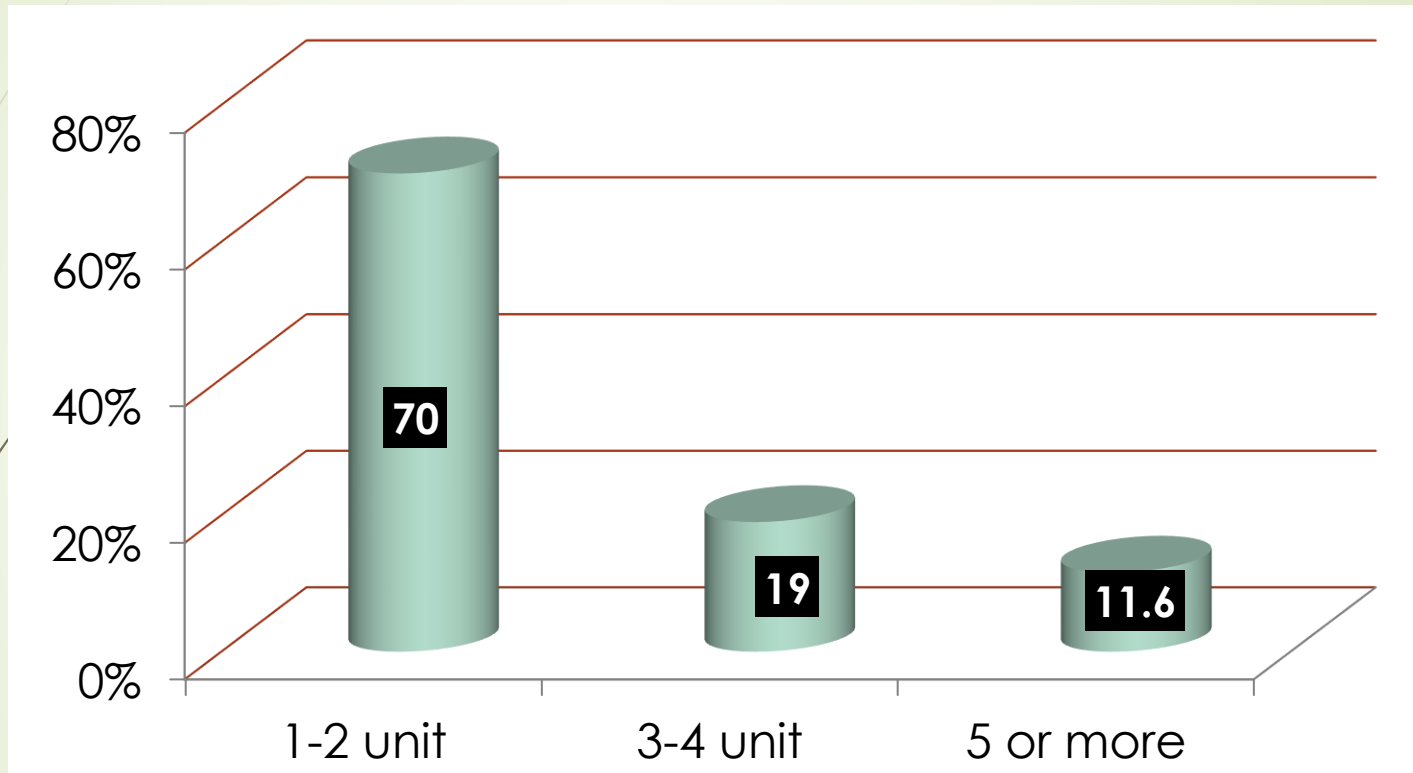
In this study, **hemoperitoneum was found 36 (80%)** cases, rupture extension to lower segment was found 17 cases (37.8%), extension to upper segment was found 12cases(26.7%), **Injury to urinary bladder was found 4 cases.(8.9%)**

Table 4: Management during operation

Surgical management	No of patient(45)	Percentage%
Surgical management		
Repair of uterus	25	55.6%
Repair of uterus with tubal ligation	10	22.2%
Subtotal hysterectomy	4	8.9%
Subtotal hysterectomy with repair of bladder	2	4.4%
Repair of uterus with repair of bladder and tubal ligation	2	4.4%
Not done due to irreversible shock and death	2	4.4%

In this study showed, **repair of uterus was done 35 patients(77.8%), subtotal hysterectomy was done 4 patients(8.9%), Subtotal hysterectomy with repair of bladder was done 2 patients(4.4%),** and repair of uterus with repair of bladder and tubal ligation was done 2 patients. Surgery not possible due to **irreversible shock** and death in 2 patients.

Blood transfusion during operation



During operation 30 patients needed (1-2) unit blood transfusion , 8 patients needed (3-4) unit blood transfusion and 5 patients needed (5 or more) unit blood transfusion

WHAT TO EXPECT



Table 5: Outcome of mother

Maternal outcome	No of patients (45)	Percentage%
Need to ICU	17	37.8%
Renal failure	4	8.9%
Death	4	8.9%
Recovery	37	82.2%

Out of 45 patients, 37 patients improved (82.2%), 4 patients developed acute renal failure, maternal death was found 4 patients (8.9%).

Table 6: Outcome of baby

Fetal outcome	No of patients (45)	Percentage%
IUD	21	46.7%
Need to NICU	10	22.2%
Neonatal death	4	8.9%
No need to NICU	10	22.2%

Table 6: shows that, **IUD** was found **21**cases (**46.7%**) **10** babies (**22.2%**) need to **NICU** and neonatal death was found **4** babies.

LET DISCUSS



DISCUSSION

- Rupture uterus still remains one of the serious obstetric complications. Lack of health information, illiteracy, poor antenatal care, poverty, home delivery by birth attendants and delay in referrals all contributes to uterine rupture.¹⁷
- In the present study **prevalence of ruptured uterus is 0.26%**. This study was similar to study done by Malik HS(0.55%).¹⁷

- **Most of the patient 28(62.2%) had irregular antenatal check up and similar results were found in other studies.¹⁸**
- **In this study showed rupture of the previous scar was the most common cause 37(82.2%), induction of labour was done 5 patients and obstructed labour was found 3 patients.**

- ▶ This study was similar to study done by **Raval BM et al, ¹⁹** where **common etiological factor proved to be previous caesarian section 75.55%.**
- ▶ In this study showed, **repair of uterus was done 35(77.8%) patients, subtotal hysterectomy was done 4(8.9%) patients, Subtotal hysterectomy with repair of bladder was done 2 patients (4.4%).**

- Same result was found Raval BM et al¹⁹ where repair of the uterus was **75.5%.and study done by Kahansim ML et al ,²⁰ repair of the uterus was done 58.3% and hysterectomy was done 3 patients.**
- Out of 45 patients, 37 patients improved (82.2%), **4 patients developed acute renal failure, maternal death was found 4 patients(8.9%).**

- But, maternal mortality secondary to uterine rupture was lower in this study. Similar result was found study done by **Quazi q et al²¹**, **maternal death was 16(6.6%)**.
- The possible explanation for this, timely diagnosis by skilled obstetrician and USG facility, 24 hrs OT facility, adequate resuscitation, availability of blood transfusion and absence of delay between diagnosis and definitive management .

- In the present study, IUD was found 21 cases(46.7%), 10 babies needed to NICU and neonatal death was found 4 babies. (8.9%)
- Perinatal death was high in our study, similar result was found study done by other developing country.^{22, 23, 24}
- perinatal mortality is due to hypoxia caused by immediate placental separation.

Compare to national study

	Present study (45)	Study by Dr Kazi Farhana Noor (CMC)(70) Jan 2010	Study by Dr Tamanna Sharmin(MMC) (100)2012-13	Study by Dr Mahbuba(FMC) (30)2011
Incidence	0.26%	0.5%	1.43%	0.83%
Risk factor				
Multipara	66.7%	92.85%	98%	
No ANC or Irregular ANC	62.2%	97%	68%	100%
Previous c/s	37(82.2%)	34.28%	39%	3.4%
Obstructed labour	3(6.7%)	25(35.71%)		9(30%)
Subtotal or Total hysterectomy	6(13.3%)	56.4%	51%	63.3%
Maternal mortality	4(8.9%)	11.42%	14%	5(16.6%)
Fetal or neonatal death	25(55.6%)	88.5%	89%	21(70%)

COMPARE TO OTHER STUDY

	present study(45)	Study by Dr Mahbuba (faridpur medical college)(30)	Study by Dr Qudsia Qazi (pakistan) (64)	Study by Dr Geremew Astitikie (Ethiopia) (242)
Incidence	0.26%	0.83%	1.6%	2.44%
Risk factor				
Rupture of the previous scar	37(82.2%)	1	12(18.8%)	9(3.7%)
Induction of labour	5(11.1%)	19(52.33%)	33(51.6%)	9(3.7%)
Obstructed labour	3(6.7%)	9(30%)	8(12.5%)	216(89.3%)
Gestational age36-40 wks	24(53.3%)	20(66.6%)		
Management				
subtotal hysterectomy	4(8.9%)	19(63.33%)	32(50%)	TAH 138(57%) Subtotal hysl41(16.9%)
Subtotal hysterectomy with repair of bladder	2(4.4%)		2(3.1%)	
Repair of uterus with repair of bladder and tubal ligation	2(4.4%)			
Repair of uterus	35(77.8%)	5(16.66%)	10(15.6%)	63(27%)
Outcome				
Maternal death	4(8.9%)	5(16.66%).	5(7.8%)	16(6.6%)
Fetal death	21(46.7%)		53(82.8%)	238(98.3%)
neonatal death	4(8.9%)		2(3.1%)	

CONCLUSION:

- In present study prevalence of ruptured uterus was 0.26%.
- **Rupture of the previous scar is the most common risk factor in this study. So, it is the burning issue to reduce the caesarean section rate.**
- In addition, hospital delivery, judicious administration of oxytocin, early resuscitation of patient and timely management is essential to decrease maternal death secondary to uterine rupture.
- Early diagnosis, well equipped Intensive Care Unit(ICU), good blood bank service, Neonatal Intensive Care Unit (NICU) can help reduce maternal and perinatal mortality.

REFERENCES

1. Dutta DC. D.C Duttas Textbook of Obstetrics. 9th edition. New Central Book Agency Ltd. 2018; 400
2. Gerard G Nahum. Uterine rupture in pregnancy. Medscape Obstetrics and Gynaecology.
Available at : <http://reference.medscape.com/article/275854/overview>. Accessed on 30th January 2020.
3. Hofmeyr Gj, Say L, Gulmezoglu AM. WHO systemic review of maternal mortality and morbidity: the prevalence of uterine rupture. BJOG.2005; 112(9); 1221-8
4. Fitzpatrick KE, Kurinczuk JJ, Alfirevic Z, Spark P, Brocklehurst P, Knight M. Uterine Rupture by intended mode of delivery in the UK: A National case –control study. PLOS Med 2012;9(3):e 1001-184.
5. Omole-Ohonsi A, Attah R. Risk factors for Ruptured uterus in a Developing country. Gynaecol Obstetric.2011;1:102
6. Igwegbe AO, Eleje GU ,Udegbumum OI. Risk factors and perinatal outcome of uterine rupture in a low resource setting. Niger MedJ.2013;54:415-9
7. Delafield R, Pirkle CM, Dumont A. Predictors of uterine rupture in a large sample of women in Senegal and Mali: cross-sectional analysis of QUARITE trial data. BMC Pregnancy Childbirth.2018;18:432

8. Astatikie G, Limenih MA, Kebede M. Maternal and fetal outcomes of uterine rupture and factors associated with maternal death secondary to uterine rupture. *BMC Pregnancy Childbirth*. 2017, April 12:17(1):117
9. Zeb L, Bibi S. Trends in frequency and causes of uterine rupture in a tertiary care center between year 2001 and 2011. *J Postgrad Med Inst*.2013;27(3):317-21
10. Rizwan N, Abbasi RM, Uddin SF.Uterine rupture,frequency of cases and fetomaternal outcome.*J Pak Med Assoc*.2011;61(4):322
11. Khanum Z, Lodhis K-Emergency Obstetric Hysterectomy: a life saving procedure. *Ann King Edward Medical College*2004;10: 292-4.
12. Revicky V, Muralidhar A, Mukhopadhyay S, Mahmood T. A case series of uterine rupture: Lessons to be learned for future Clinical Practice. *J obstet Gynaecol India*.2012 Dec; 62(6); 665-73.
<http://doi.org/10.1007/s13224-012-0328-4>. Epub 2013 Jan 16.pmid:24293845; PMCID: PMC 3575904
13. Khooharo Y, Yousfani JZ, Malik SH, Amber A, Majeed N, Malik NH, et al. Incidence and management of rupture uterus in obstructed labour, *J Ayub Med Coll. Abbottabad*, 2013 Jan- Jun;25(1-2):149-51 pmid:25098081
14. Kidantou HL, Mwampagatwa I, Van Roosmalen J. uterine rupture: a retrospective analysis of causes, complication and outcomes of Muhimbili National Hospital in Dar es Salam. Tanzania. *Tanzan J Health Res*.2012July;14(3):220-5.pmid26591760

15. Berhe Y, Gidey H, Wall LL. Uterine rupture in Mekelle, northern Ethiopia, between 2009 and 2013, *Int J Gynaecol Obstet*. 2015 August; 130(2):153-6
<http://doi.org/10.1016/j-ijgo.2015.02.028>. Epub 2015 Apr 21. pmid:25935473
16. Zhang Y, Yan J, Han Q, Yang T, Cai L, Fu Y, et al. Emergency obstetric hysterectomy for life threatening postpartum hemorrhage: A 12-year review. *Medicine (Baltimore)*. 2017b Nov; 96(45):e8443.
<http://doi.org/10.1097/MD.00000000000008443>. pmid:29137030; PMCID: PMC5690723
17. Malik HS. Frequency, predisposing factors and fetomaternal outcome in uterine rupture. *J Coll Physician Surg Pak*. 2006; 16:472-5
18. Mahbuba, IP Alam. Uterine Rupture-Experience of 30 Cases at Faridpur Medical College Hospital. *Faridpur Med. Coll. J.* 2012; 7(2):79-81
19. Raval BM, Patil AG, Shah PD et al. Uterine rupture: a preventable obstetric catastrophe. *Int J Reprod Contracept obstet Gynaecol*. 2020 Jan; 9(1):151-155.

20. Kahansim ML, Nyango DD, Oyeboode TA, Egbodo CO et al. Predisposing factors and outcome of uterine rupture in Jos , North-central Nigeria. *Int J Res Med Sci.* 2020 Sep; 8(9): 3198-3202
21. Qazi Q, Akhter Z, Khan K, Khan AH. Woman Health ; Uterus Rupture, Its complication and management in Teaching Hospital Bannu, Pakistan. *Maedica , A journal of Clinical Medicine* 2012, 7(1)49-53
22. Sahu L.A 10 years analysis of Uterine rupture at aTeaching institution. *J obstet Gynaecol India.*2006; 56(6):502-6
23. Nausheba R. Razia MA, Syed FU. Uterine rupture, frequency of cases and fetomaternal outcome. *J Park Med Assoc.*2011;61(4):322-4
24. Dattijo LM,Umar NI, Yussuf BM. Ruptured uterus in Azare, North Eastern Nigeria .*Jos J Med.*2011; 5(2):17-20

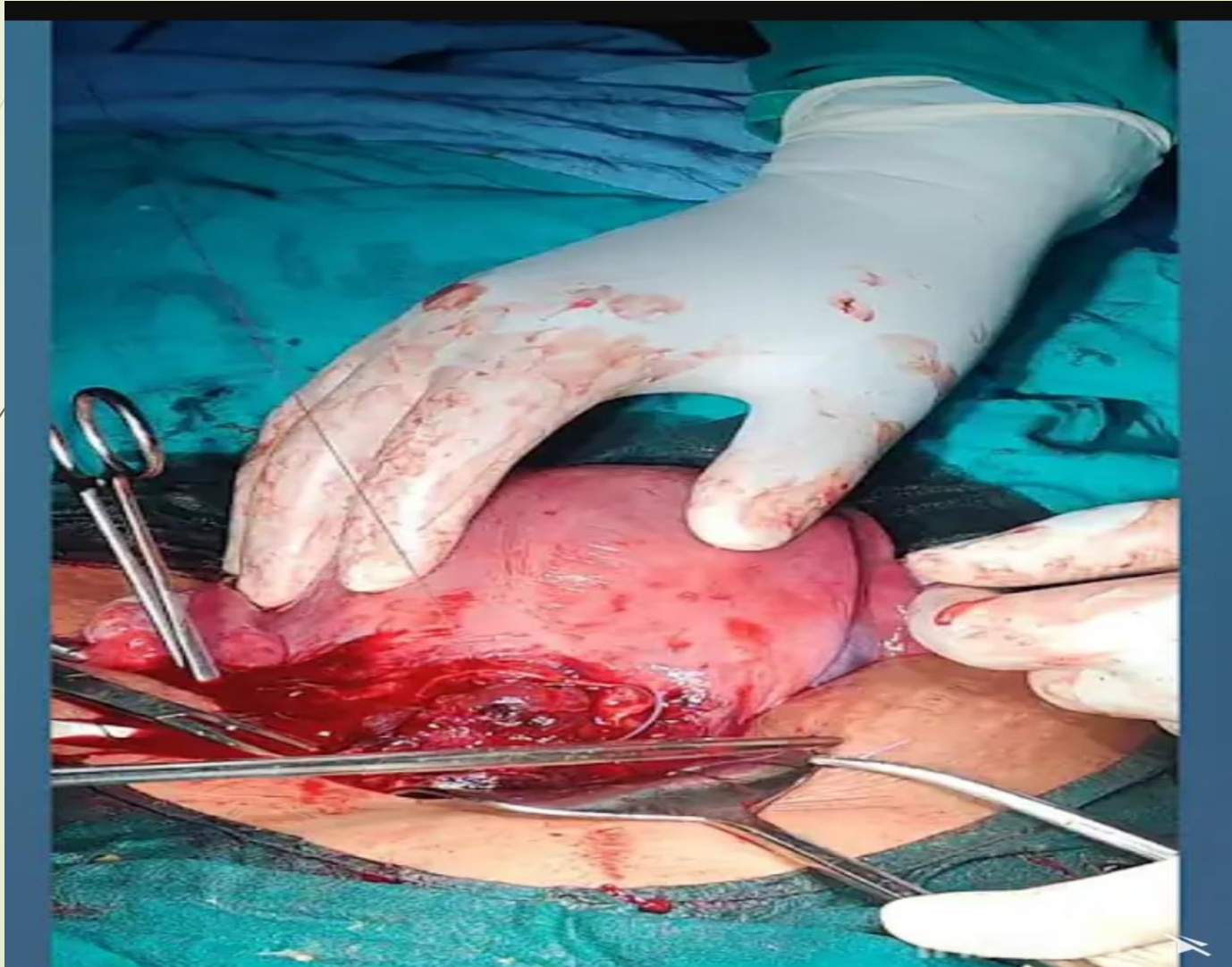


Rupture uterus

Definition: Disruption in the continuity of the all uterine layers (endometrium, myometrium and serosa) any time beyond 28 weeks of pregnancy is called rupture of the uterus.

Incidence: The prevalence widely varies from 1 in 2000 to 1 in 200 deliveries.

Spontaneous rupture of the uterus



Etiology

➤ The causes of rupture of the uterus are broadly divided into :

- ❑ Spontaneous
- ❑ Scar rupture
- ❑ Iatrogenic

Spontaneous:

During pregnancy: It is rare for an apparently uninjured uterus. The causes are:

- 1) Previous damage to the uterine walls following dilatation and curettage operation or manual removal of placenta.

- 2) Rarely in grand multiparae due to thin uterine walls.
- 3) Congenital malformation of the uterus(bicornuate variety)
- 4)In Couvelaire uterus

Spontaneous rupture during pregnancy is usually complete, involves the upper segment and usually occur in later months of pregnancy.

During labour:

- Obstructive rupture-This is the end result of an obstructed labour.
- Non-obstructive rupture- Grand multiparae are usually affected

Scar rupture

- The incidence of **lower segment scar rupture is about 1-2%, while that following classical one is 5-10 times higher**
- **During pregnancy:** Classical caesarean or hysterotomy scar is likely to give way during later months of pregnancy.
- **During labour:** Classical caesarean or hysterotomy scar is more vulnerable to rupture during labour
- **Iatrogenic or traumatic:**

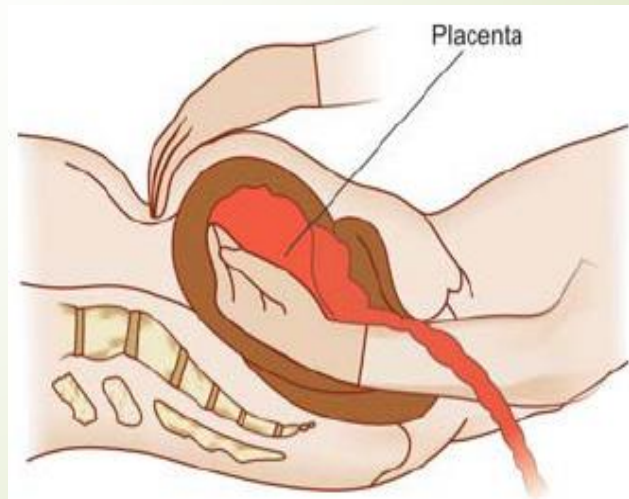
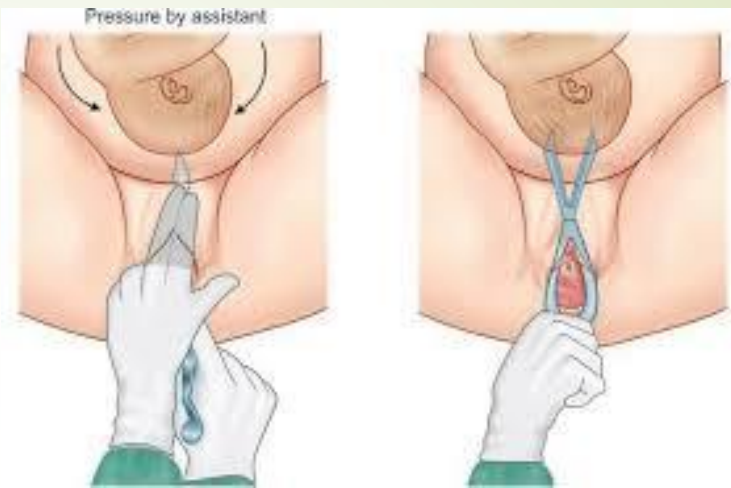
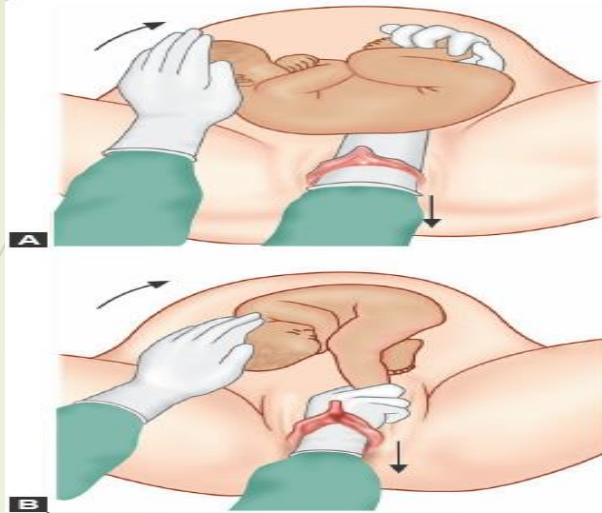
Iatrogenic or traumatic:

During Pregnancy:

- 1. Injudicious administration of oxytocin.
- 2. Use of prostaglandins for induction of labour or abortion.
- Forcible external version specially under G/A
- Fall or blow on the abdomen

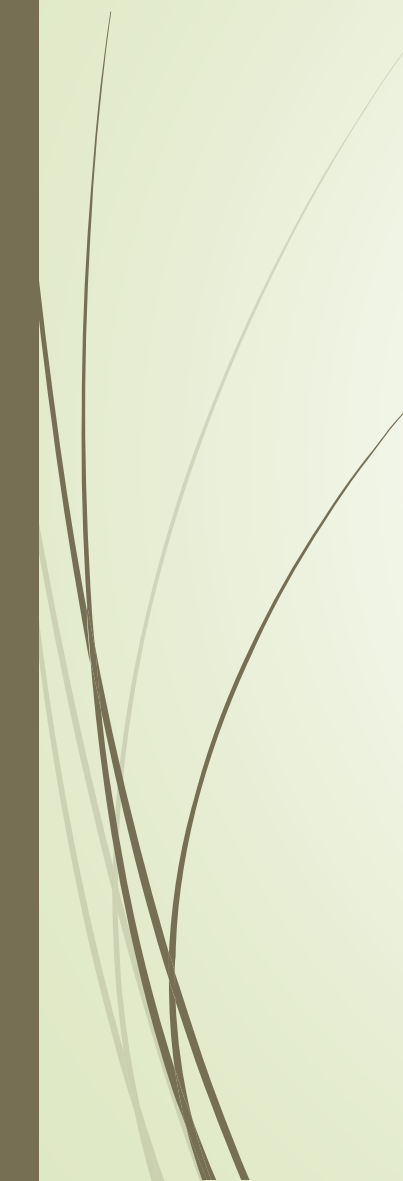
- **During labour :**
- 1. Internal podalic version-following obstructed labour
- 2. Destructed operation
- 3. Manual removal of placenta
- 4. Injudicious administration of oxytocin for augmentation of labour
- 5. Application of forceps or breech extraction through incompletely dilated cervix.

Iatrogenic cause of rupture uterus

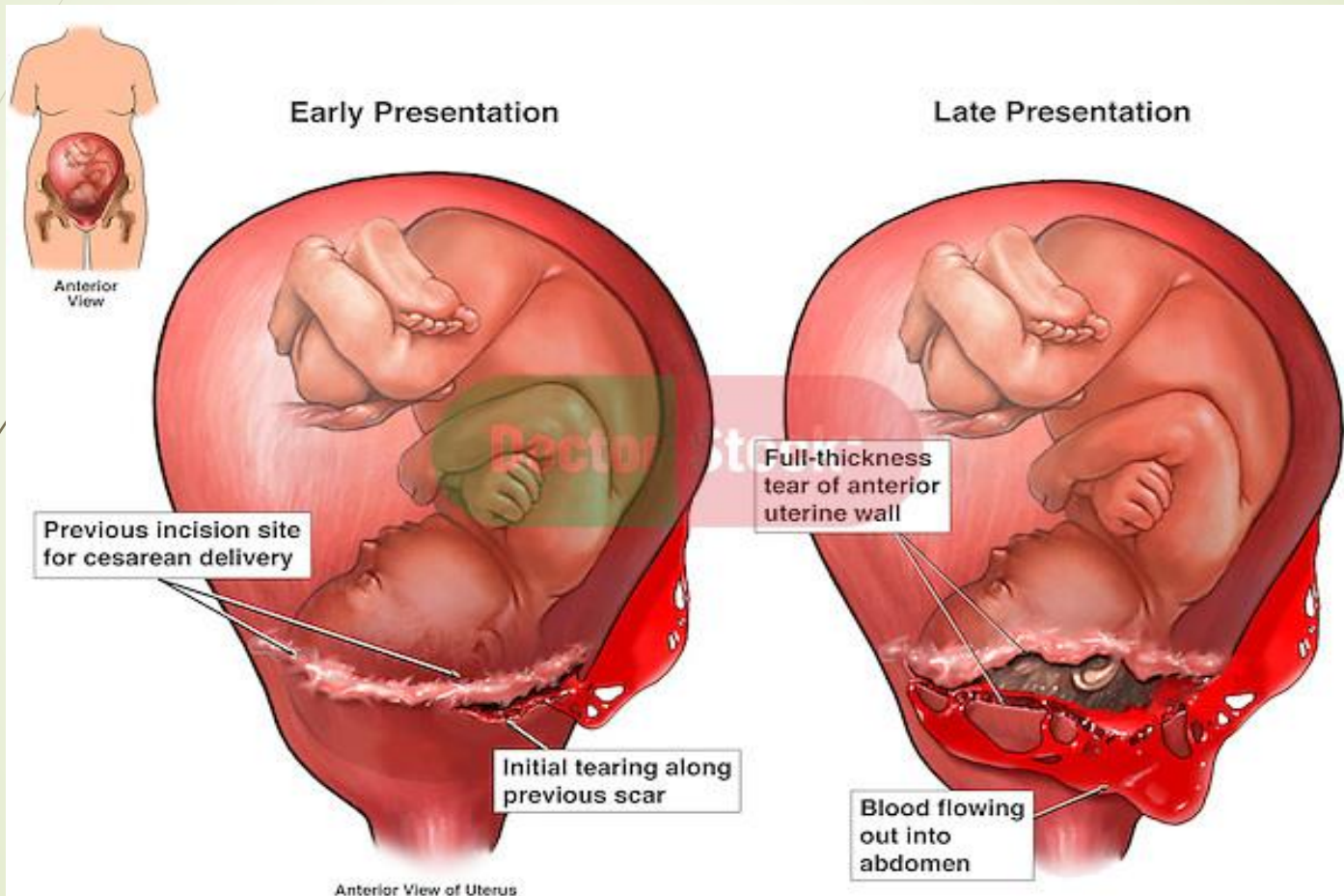




Pathology

- **Types:** Depending on whether the peritoneal coat is involved or not.
 - **Incomplete rupture:** Usually results from rupture of the lower segment scar or extension cervical tear to lower segment with formation of a broad ligament hematoma.
 - **Complete rupture:** Usually occurs following disruption of scar in upper segment.
- 

Incomplete and complete rupture



Difference between dehiscence and scar rupture

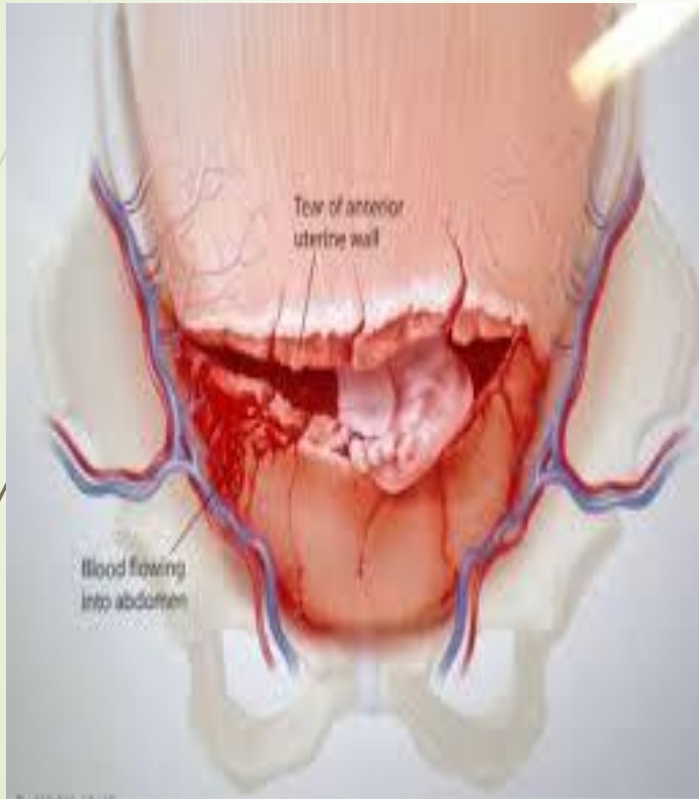
➤ **Scar dehiscence:**

- 1. Disruption of part of the scar
- 2. Fetal membrane remain intact
- 3. Bleeding is almost nil or minimal.

➤ **Scar rupture:**

- 1. Disruption of the entire length of the scar.
- 2. Complete separation of all the uterine layers including serosa.
- 3. Varying amount of bleeding.
- 4. Uterine cavity and peritoneal cavity become continuous.

Scar rupture and scar dehiscence



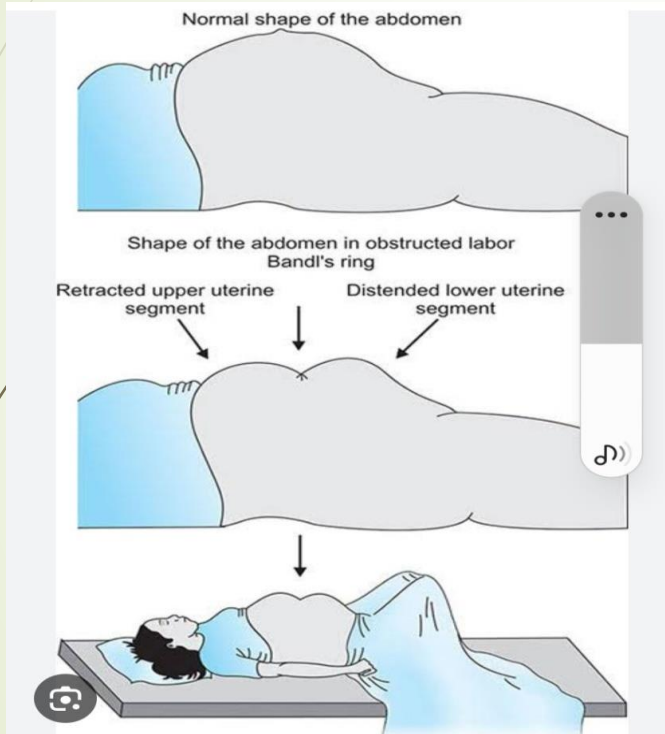
Diagnosis

- **Scar rupture (during pregnancy)**
- Patient complain dull abdominal pain over scar area with slight vaginal bleeding
- Varying degree of tenderness on uterine palpation
- Fetal heart sound may be irregular or absent
- **During labour: Spontaneous obstructive rupture**
- **Premonitory phase**
- Feature of obstruction
- Patient is dehydrated and exhausted
- Rise pulse rate and temperature

- Bandl's ring may be visible
- Fetal distress or FHR may be absent.
- Vagina dry and oedematous, presenting part is found jammed in the pelvis.
- **Phase of rupture:**
- Sense of something giving way at the height of uterine contraction.
- The constant pain changed to dull aching pain.
- G/E: Feature of exhaustion and shock

- **Abdominal examination-**
- Superficial fetal parts
- Absence of FHS and uterine contour
- Two separate swelling
- **Vaginal examination**
- Varying degree of bleeding
- Recession of presenting part

Picture of bandl,s ring



Management

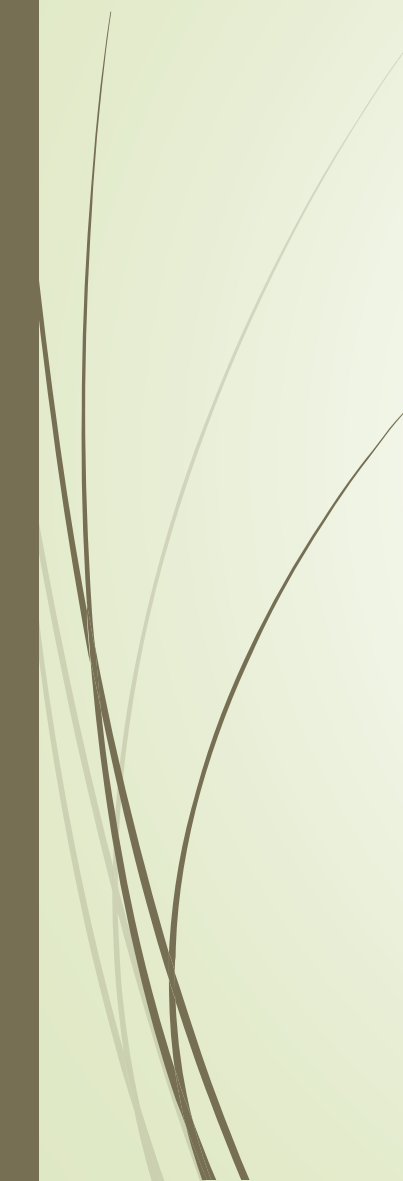
➤ **Prophylaxis:**

- The at- risk mothers, likely to rupture, should have mandatory hospital delivery
- Judicious selection of cases for VBAC
- Judicious administration of oxytocin for induction of labour or abortion.
- Undue delay in the progress of labour should be concern and cause sought for
- Avoid forceps or breech extraction through incompletely dilated cervix



Treatment

Principles

- -Intensive resuscitation
 - -Emergency laparotomy
 - -Broad spectrum antibiotics
 - -Adequate post-operative care
- 

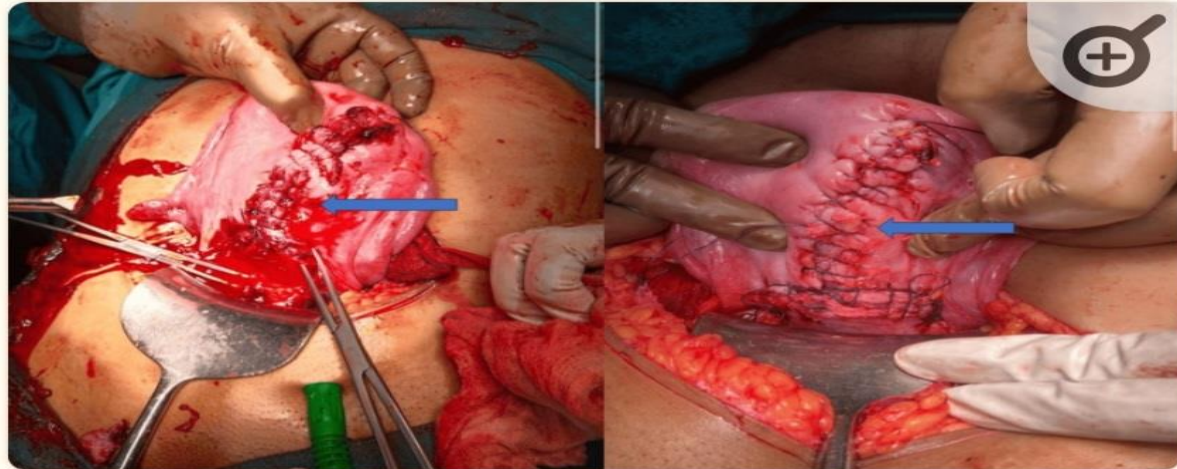
Resuscitation

- ▶ Check Airway, Breathing and Circulation(ABC) and maintain the Airway
- ▶ Monitor level of consciousness and continuous electronic fetal monitoring.
- ▶ Administer oxygen via face mask at 15L/min
- ▶ Insert two large bore IV cannulas and take blood samples for CBC, group and cross matching and coagulation screen
- ▶ Commence IV infusion of crystalloid solution. Infuse rapidly to attempt to maintain circulatory volume until blood available

- ▶ Patient in a left lateral tilt
- ▶ Catheterization
- ▶ If the labour is being augmented-turn off the oxytocin
- ▶ Transfer to theatre as soon as possible where management will be dependent upon individual findings at the time
- ▶ Alert theatre staff to prepare for laparotomy
- ▶ Inform **senior Anesthetist, Obstetrician, Urologist ,Hematologist and Pediatrician**

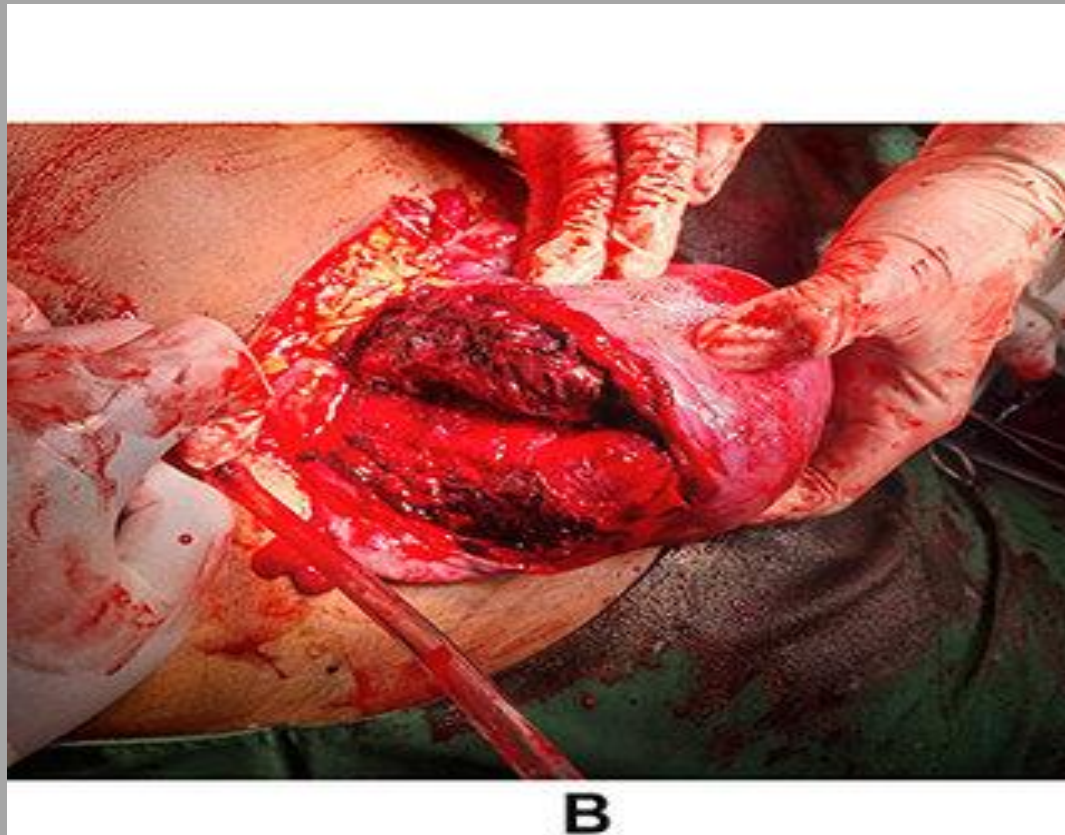
Emergency Laparotomy:

- ▶ Repair-Scar rupture where the margins are clean.
- ▶ Repair and sterilisation.



Left picture - T-shaped uterine rupture extending till the fundus; right picture - the uterus after repair

- ▶ Hysterectomy-spontaneous obstructed rupture, disturbed morbid anatomical changes near the cervico-vaginal region.



Intravenous Broad spectrum antibiotics- Cephalosporin+ Metronidazole combination

Postoperative care

Care will be managed by multidisciplinary team

Require HDU/ICU

Record vital signs: BP, Pulse, Respiration, Temperature and continuous Spo₂ monitoring

Observe urine output and measure hourly. Aim for urine output of 0.5ml/kg/hr

Consider IV antibiotics for 48 hours and subsequent oral antibiotics for five days

Ensure appropriate thrombo-prophylaxis

Prognosis

- Lower segment scar rupture gives a comparatively better prognosis.
- Rupture following obstructed labour either spontaneous or due to instrumentation gives 20% maternal death.
- **The major cause of death is hemorrhage, shock and sepsis.**
- Late sequelae include intestinal obstruction and rupture of the subsequent pregnancy.



- Identification of high risk pregnancy by regular ANC
- The at- risk mothers, should have mandatory hospital delivery
- Judicious selection of cases for VBAC
- Judicious administration of oxytocin for induction of labour or abortion.
- **Reduce the rate of caesarian section**
 - by encourage the pregnant lady to natural child birth and tell about the side effect of C/S
 - Making decision of C/S by experienced obstetrician



**When you look into your mother's eyes, you know
that is the purest love you can find on this earth. -
Mitch albom**

Thank You