



## Tackling Caesarean Scar Pregnancy to Target Morbidly Adherent Placenta Previa– A Viable Option?

Authors

**Dr S.Sreelatha<sup>1</sup>, Dr. Manjula M<sup>2</sup>**

<sup>1</sup>Additional professor, Dept. of O & G, SAT Hospital, Govt. Medical College, Trivandrum

<sup>2</sup>Assistant Professor, Dept. of O & G, SAT Hospital, Govt. Medical College, Trivandrum

Corresponding Author

**Dr Manjula M**

Assistant professor, Dept. of O & G, SAT Hospital, Govt. Medical College, Trivandrum

### Abstract

**Introduction:** *The late consequences of lower segment caesarean delivery namely scar pregnancy and morbidly adherent placenta in the lower uterus were thought to be two separate entities. Recently few studies have shown them to be a continuum.*

**Aim of the study** *was to analyse the clinical features, associations and the morbidity pattern of scar pregnancy and morbidly adherent placenta previa in pregnancies following caesarean delivery. Methodology – This was a descriptive study conducted in the Department of O&G, Government Medical College Thiruvananthapuram from January to December 2016. All cases diagnosed as CSP and MAPP were included.*

**Results:** *There were 8 caesarean scar pregnancy cases and 14 morbidly adherent placenta previa cases in our study. Regarding previous obstetric details, one significant finding was that in all cases where the indication for previous CS was known (72.7%), caesarean delivery was conducted before the onset of active labour. Maternal morbidity was significantly high in MAPP when compared to CSP*

**Conclusion:** *As MAPP is considered a continuum of CSP and is definitely more morbid than CSP it is better to diagnose and tackle CSP at an early gestation at least in a subset of women who wishes not to continue a high risk pregnancy.*

**Keywords:** *caesarean scar pregnancy, morbidly adherent placenta previa*

**Abbreviations:** *CSP – caesarean scar pregnancy, MAPP – morbidly adherent placenta previa, USS – ultra sound scan MRI- magnetic resonance imaging.*

### Introduction

An embryo can get implanted in the lower segment of the uterus. When the implantation site corresponds to the site of the uterine scar in a woman with a previous lower segment caesarean it becomes significant. The caesarean scar can be a healthy one with no breach in the endometrial

lining or an improperly healed one with a breach in the endometrium or with minute tubular tracts. If the implantation occurs on a healthy scar, the gestational sac may grow into and occupy the uterine cavity and the placenta may remain in the lower segment but may not be adherent. If the implantation is ‘on’ or ‘in’ an improperly healed

scar<sup>(1)</sup> the sequel may be one of the two unforeseen consequences of caesarean delivery, namely a caesarean scar pregnancy or a morbidly adherent placenta<sup>(2)</sup>.

Previously they were thought to be two separate entities. The natural history of caesarean scar pregnancy was studied and their progression to morbidly adherent placenta previa became evident<sup>(3)</sup>. The histopathology of the two entities were also analysed and found to be similar<sup>(4)</sup>. So it can be assumed that they are different stages of a continuum of lower uterine implantation on an unhealthy scar<sup>(5,6)</sup>. This becomes significant because of two reasons. One is its high morbidity and the other the increasing incidence in par with the rising caesarean rate which is a worldwide trend.<sup>(7,8)</sup> The management options of this entity are many but yet to be standardised.

This study aims to analyse the clinical features, associations and the morbidity pattern of both scar pregnancy and morbidly adherent placenta in pregnancies following caesarean delivery.

### Materials and Methods

This was a descriptive study conducted in the department of Obstetrics and Gynaecology, Government Medical College, Thiruvananthapuram during the year 2016. All cases of scar pregnancy, early and late placenta previa accrete in women with one or more previous caesarean were included in the study.

The sono - imaging criteria used to diagnose scar pregnancy<sup>(9,10)</sup> was empty upper uterine cavity and cervical canal, with

- 1) the gestational sac with or without yolk sac and /or fetal pole in the lower uterus corresponding to the scar area
- 2) Presence of a thinned out or ill-defined anterior myometrium adjacent to bladder with plenty of peri -trophoblastic flow
- 3) a heterogeneous vascular mass at the scar site in nonviable pregnancies

Morbidly adherent placenta in the lower segment was diagnosed with ultrasound by any of the following features<sup>(11,12)</sup>

- 1) Loss of the normal retro placental sonolucent area
- 2) Intra -placental turbulent lacunae
- 3) Thinning or disruption of the hyperechogenic uterine serosa- bladder wall interface with vascularisation perpendicular to uterine wall.

MRI was done when the ultrasound scan finding was doubtful. In acute emergency the diagnosis was clinical, confirmed by histopathology.

The cases were enrolled at the time of diagnosis which was at varying gestational age. At the time of enrolment their previous medical records from the primary or secondary care centres were verified and documented. The cases were followed up till the final outcome.

### Results and Discussion

During the study period of one year from January to December 2016 there were 8520 deliveries. We had eight scar pregnancies and fourteen cases of morbidly adherent placenta previa in previous caesarean pregnancies during that period.

All were referred to the tertiary care, 14 from public hospitals and 8 from private hospitals. 54.5% of women were below poverty line. Majority (n=13) was in the age group of 25-29. Below 20 and above 40 years of age there was none. 63.6% had one or more medical comorbidities. Among 22 cases 77.3% had previous one CS, 18.18% previous 2 CS and 4.54% previous 3CS. The interval from previous CS to the index pregnancy ranged from 10.5 months to 12 years. In majority of cases (72.7%) section was done prior to the onset of active labour. Other studies have also found this association<sup>(13)</sup> Two cases had history of mild postpartum haemorrhage and one had postoperative fever after previous section. For all women diagnosed as CSP the presenting symptom was mild bleeding per vaginum. Pain was not a prominent symptom.

**Table.1** Sociodemographic and clinical characteristics

Serial no	Variable	Number & percentage(n=22)
1.Age(years)	20 – 30	15(68.2%)
	30 - 40	7(31.8%)
2.Referral pattern	Public	14(63.7%)
	Private	8(36.4%)
3.Number of previous CS	1	17(77.3%)
	2	4(18.2%)
	3	1(04.5%)
4. Indication for primary caesarean	Failed induction	7
	Breech	4
	Severe preeclampsia	1
	2 <sup>nd</sup> degree CPD	2
	Compromised fetus	1
	Placenta previa	1
	Not documented	6(27.3%)
	Documented	16(all pre -labour CS-72.7%)
5. Interval from last CS	Less than 1 year	1(04.5%)
	1-5 years	17(77.3%)
	More than 5 yrs	4(18.2%)
6.Definitive treatment	Medical treatment alone	2(09.0%)
	Laparotomy &scar pregnancy excision	2(09.0%)
	Combination of medical, S&E	2(09.0%)
	,Laparotomy &scar excision	2(09.0%)
	Caesarean hysterectomy	14(63.6%)

**Table .2** Morbidity pattern – comparison between CSP & MAPP

VARIABLE	CSP	MAP	P value
1.Packed cell transfusion	1.38	6.43	.002
2. duration of surgery	.75hrs	3.321	.000
3.ICU admission	2	12	.004
4. ventilator care	0	2	.000
5.obstetric hysterectomy	0	14	.000
6.bladder/ureteric injury	0	7	.000
7. total hospital stay	15.12	33	.007
8.maternal near miss	1	14	.000

The antenatal records of cases were reviewed to analyse the diagnostic accuracy and lapses in the routine first trimester obstetric ultrasound scan. Of the 22 cases, scar pregnancy was diagnosed in routine scan in two cases in the primary care centres and four in our institution. Two cases misinterpreted as missed abortion were diagnosed as scar pregnancy only during evacuation. Eight patients did not have a first trimester scan and six were diagnosed as live intra uterine pregnancies. These 14 cases were diagnosed to have MAPP later.

Of the eight CSP cases, two responded to medical management with systemic methotrexate. Rest had laparotomy and excision of scar pregnancy as per the request of the patients or due to the emergency nature. Uterus was conserved in all.

Fourteen patients carried the pregnancy to second trimester including the eight cases without first trimester sonogram. Thirteen cases had routine second trimester sonogram. All were reported to have low lying placenta. Of these 13, two cases were suspected to have features of morbidly adherent placenta. Of the suspected MAPP cases, one which was having venous lakes perforated around 28 weeks went into shock and emergency hysterectomy was done. One case from the group of low lying placenta also perforated at 27 weeks went into shock and underwent emergency hysterectomy. One patient who had no antenatal sonogram either in the 1<sup>st</sup> or 2<sup>nd</sup> trimester presented in haemorrhagic shock at 24 weeks of pregnancy and was diagnosed to have MAPP intra operative.

Out of the eleven cases which progressed to third trimester nine were diagnosed to have MAPP in third trimester ultrasound and the two diagnosed already as placenta previa turned out to be MAPP intra operative.

As a diagnostic modality USS is 100% sensitive and 37.5% specific while MRI is 76.9% sensitive and 50% specific in studies<sup>(14)</sup> but a meta-analysis revealed that both USS and MRI are equally accurate in predicting invasive placentation<sup>(15)</sup>. The gaps in the diagnosis may be due to the lack of awareness or failure to look at the fine details.

Both CSP and MAP are morbid conditions<sup>(16)</sup> but the morbidity of MAPP is much more than that of CSP as evident in this study (Table 2.) When all patients with MAPP ended up in obstetric hysterectomy, CSP cases could be managed medically or by conservative surgery. Seven out of 14 patients (50%) who had MAPP had intra operative bladder or ureteric injury whereas none of the scar pregnancy cases had any visceral injury. All MAPP were maternal near miss cases, but only one of the scar pregnancies became a near miss. Average no of packed cell transfused was 1-2 in CSP where as in MAPP it was 6-7. The duration of surgery and hospital stay was significantly more in MAPP compared to CSP. In our hospital, during the study period, MAPP contributed to 50% of massive obstetric haemorrhage, 78% of obstetric hysterectomy and 61% of maternal near miss. Thus it is evident from our study that maternal morbidity and maternal near miss is significantly less in CSP when compared to MAPP. As per ACOG committee opinion even with elective management and multidisciplinary care, MAPP carries high morbidity and mortality is as high as 7%.<sup>(17)</sup>. Since it is evident from various studies that MAPP is a continuum of CSP, it may be a viable option to tackle scar pregnancy to target the more morbid MAPP at least in a subset of women who is not willing to continue the abnormally located , risky pregnancy. Timely USS is crucial because as pregnancy progresses the foetus grow into the available space and the low implantation site may

be missed. However the factors deciding the depth of trophoblastic penetration is not well known may be the character of the scar is the deciding factor<sup>(18)</sup>.

### Limitations of the study

Since the cases were recruited only after diagnosis, some data were missing. The incidence of lower uterine pregnancy and their natural course can be studied only in a prospective trial where all pregnancies in a scarred uterus are recruited.

### Recommendations

All pregnancies in a scarred uterus should undergo a sono-evaluation at 6-8weeks to identify a low implantation. Once a scar pregnancy has been confirmed the information should be shared with the parents regarding the unpredictable morbidity and an informed decision can be taken about the management options.

**Funding** – none

**Conflict of Interest** - none

### References

1. Vial Y, Petignat P, Hohlfield P. Pregnancy in a Cesarean scar. *Ultrasound Obstet Gynecol* 2000;16:592–3
2. Timor-Tritsch IE, Monteagudo A. Unforeseen consequences of the increasing rate of cesarean deliveries: early placenta accreta and cesarean scar pregnancy. A review. *American journal of obstetrics and gynecology*. 2012 Jul 31;207(1):14-29.
3. Zosmer N, Fuller J, Shaikh H, Johns J, Ross JA. Natural history of early first-trimester pregnancies implanted in Cesarean scars. *Ultrasound in Obstetrics & Gynecology*. 2015 Sep 1;46(3):367-75.
4. Timor-Tritsch IE, Monteagudo A, Cali G, Palacios-Jaraquemada JM, Maymon R, Arslan AA, Patil N, Popiolek D, Mittal KR. Cesarean scar pregnancy and early placenta accreta share common histology. *Ultrasound in Obstetrics & Gynecology*. 2014 Apr 1;43(4):383-95.

5. Sinha P, Mishra M. Caesarean scar pregnancy: a precursor of placenta percreta/accreta. *Journal of Obstetrics and Gynaecology*. 2012 Oct 1;32(7):621-3
6. Timor-Tritsch IE, Monteagudo A, Cali G, Vintzileos A, Viscarello R, Al-Khan A, Zamudio S, Mayberry P, Cordoba MM, Dar P. Cesarean scar pregnancy is a precursor of morbidly adherent placenta. *Ultrasound in Obstetrics & Gynecology*. 2014 Sep 1;44(3):346-53
7. Betrán AP, Ye J, Moller AB, Zhang J, Gülmezoglu AM, Torloni MR. The increasing trend in caesarean section rates: global, regional and national estimates: 1990-2014. *PLoS one*. 2016 Feb 5;11(2):
8. Solheim KN, Esakoff TF, Little SE, Cheng YW, Sparks TN, Caughey AB. The effect of cesarean delivery rates on the future incidence of placenta previa, placenta accreta, and maternal mortality. *The Journal of Maternal-Fetal & Neonatal Medicine*. 2011 Nov 1;24(11):1341-6.
9. Ash A, Smith A, Maxwell D. Cesarean scar pregnancy. *BJOG: An International Journal of Obstetrics & Gynaecology*. 2007 Mar 1;114(3):253-63.
10. Selvaraj LR, Rose N, Ramachandran M. Pitfalls in Ultrasound Diagnosis of Cesarean Scar Pregnancy. *The Journal of Obstetrics and Gynecology of India*.:1-9.
11. Chou MM, Ho ES, Lee YH. Prenatal diagnosis of placenta previa accreta by transabdominal color Doppler ultrasound. *Ultrasound in obstetrics & gynecology*. 2000 Jan 1;15(1):28-3.
12. Abuhamad A, Cali G, Giambanco L, Puccio G, Forlani F. Morbidly adherent placenta: evaluation of ultrasound diagnostic criteria and differentiation of placenta accreta from percreta. *Ultrasound in obstetrics & gynecology*. 2013 Apr 1;41(4):406-12.
13. Maymon R, Halperin R, Mendlovic S, Schneider D, Vaknin Z, Herman A, Pansky M. Ectopic pregnancies in Caesarean section scars: the 8 year experience of one medical centre. *Human Reproduction*. 2004 Feb 1;19(2):278-84.
14. Riteau AS, Tassin M, Chambon G, Le Vaillant C, de Laveaucoupet J, Quéré MP, Joubert M, Prevot S, Philippe HJ, Benachi A. Accuracy of ultrasonography and magnetic resonance imaging in the diagnosis of placenta accreta. *PLoS One*. 2014 Apr 14;9(4)
15. D'antonio F, Iacovella C, Palacios Jaraquemada J, Bruno CH, Manzoli L, Bhide A. Prenatal identification of invasive placentation using magnetic resonance imaging: Systematic review and meta-analysis. *Ultrasound in Obstetrics & Gynecology*. 2014 Jul 1;44(1):8-16.ing in the diagnosis of placenta accreta. *PLoS One*. 2014 Apr 14;9(4)
16. Eller AG, Bennett MA, Sharshiner M, Masheter C, Soisson AP, Dodson M, Silver RM. Maternal morbidity in cases of placenta accreta managed by a multidisciplinary care team compared with standard obstetric care. *Obstetrics & Gynecology*. 2011 Feb 1;117(2, Part 1):331-7.
17. ACOG Committee Opinion no. 529 July 2012 Placenta Accreta
18. Agten AK, Cali G, Monteagudo A, Oviedo J, Ramos J, Timor-Tritsch I. The clinical outcome of cesarean scar pregnancies implanted “on the scar” versus “in the niche”. *American journal of obstetrics and gynecology*. 2017 Jan.