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REPRODUCTIVE MEDICINE

Invasive placentation and uterus preserving treatment modalities: a systematic review

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Abstract
Purpose We present a systematic review to evaluate failure rates (secondary hysterectomy or maternal mortality) and success rates (subsequent menstruation or pregnancy) after different uterus preserving treatment modalities in women with invasive placentation.
Methods A review of English, German or Dutch language-published research, using Medline and Embase databases, was performed. Studies of any design were included.
Results Ten cohort studies and 50 case series or case reports were included. Expectant management reported a secondary hysterectomy in 55/287 (19%), maternal mortality in 1/295 (0.3%), a subsequent menstruation in 44/49 (90%) and a subsequent pregnancy in 24/36 (67%). Embolization of the uterine arteries described a secondary hysterectomy in 8/45 (18%), a subsequent menstruation in 8/13 (62%) and a subsequent pregnancy in 5/33 (15%). Methotrexate therapy presented a secondary hysterectomy in 1/16 (6%), a subsequent menstruation in 4/5 (80%) and a subsequent pregnancy in 1/2 (50%). Uterus preserving surgery showed a secondary hysterectomy in 24/77 (31%), maternal mortality in 2/55 (4%), a subsequent menstruation in 28/34 (82%) and a subsequent pregnancy in 19/26 (73%).
Conclusions This review indicates that different uterus preserving treatment modalities may be effective in managing invasive placentation. Despite the extensive review of the literature, no conclusions about the superiority of any modality can be drawn.

Keywords Invasive placentation · Conservative management · Uterus preserving therapy · Systematic review

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Introduction

Placental implantation in which there is abnormally firm adherence to the uterine wall is defined as placenta increta as well as related conditions like placenta accreta and percreta [1]. This is a challenging obstetrical problem causing severe maternal morbidity like uterine perforation, infection and severe hemorrhage. Severe bleeding is the single most significant cause of maternal death worldwide [2]. Invasive placentation affects ~2% of all singleton deliveries [3]. Probably due to the increasing rates of caesarean deliveries in most countries, the incidence has increased in recent years [4]. Because previous studies reported better maternal survival with hysterectomy than with uterus preserving treatment modalities, a hysterectomy has long been the initial therapy [2]. However, preserving uterine function is important to preserve reproductive potential.

Several case reports indicate that uterus preserving treatment may result in successful management of invasive placentation. In the current literature, different uterus preserving treatment modalities are described: expectant management, embolization of the uterine arteries, methotrexate therapy and uterus preserving surgery [2, 5, 6]. In 2007, Timmermans et al. [6] reviewed 48 case reports

about the obstetric outcome after expectant management, embolization of the uterine arteries and methotrexate therapy for invasive placentation. They concluded that it should only be considered in highly selected cases and that no proof was found for a first choice uterus preserving treatment modality.

We present a literature review to evaluate failure rates (secondary hysterectomy or maternal mortality) and success rates (subsequent menstruation or pregnancy) after different uterus preserving treatment modalities in women with invasive placentation.

Methods

Search strategy

A computer-aided search of Medline and Embase was carried out. The following search terms were used: 'placenta accreta', 'placenta increta', 'placenta percreta' and 'conservative treatment' (Appendix 1). The reference lists of identified studies were searched for additional relevant studies.

Inclusion criteria

Every study design that was published in English, German or Dutch was considered for inclusion. Given that randomized-controlled trials and large observational cohort studies that can be used to define best practice are lacking, studies of any design were obtained for further evaluation. Studies were included if they described the course of uterus preserving treatment modalities for patients with placenta accreta, increta or percreta. Uterus preserving treatment modalities were defined as initial therapy consisting of: expectant management (expectant management for patients who delivered vaginally or closing the hysterectomy as caesarean delivery occurred), embolization of the uterine arteries, methotrexate therapy or uterus preserving surgery. Because we investigated uterus preserving techniques in which the placenta was left in situ, we limited uterus preserving surgery to hemostatic sutures, arterial ligation and balloon tamponade. Diagnoses of invasive placentation must be made upon clinical suspicion, ultrasound or magnetic resonance imaging (MRI). Studies were excluded if patients underwent a hysterectomy as initial management, or if patients were approached conservatively because caesarean hysterectomy was considered too dangerous or difficult.

Selection of studies

The first reviewer (CN) screened the titles and abstracts of identified articles for eligibility. Papers that seemed to be relevant were obtained, and the full text articles were screened for inclusion. If there was doubt about the suitability of the studies, they were discussed with two other independent reviewers (TP, TE).

Data extraction and analysis

The eligible articles were summarized in a data extraction form, including the following items: obstetric characteristics, maternal morbidity/mortality and subsequent pregnancy/menstruation. Obstetric characteristics included gestational age and mode of delivery. Maternal morbidity/mortality was defined as severe vaginal bleeding (need for blood transfusion or >1,000 ml blood loss), sepsis (definition used according to the definitions of the authors in the different studies), a secondary hysterectomy or maternal mortality.

Data were presented as numbers and as percentages (rates). Rates were calculated using the reported number of a specific item as the numerator divided by all studies that reported that specific item as denominator.

Data were summarized separately for expectant management, methotrexate therapy, embolization of the uterine arteries and uterus preserving surgery with distinction between forms of invasive placentation (placenta accreta, increta or percreta).

Data extraction and analysis was done by the first reviewer (CN).

Results

We identified 1,477 articles, of which 270 were potentially relevant after removing duplicates and screening the title and abstract. Applying our inclusion criteria led to the inclusion of 10 cohort studies and 50 case series or case reports describing 434 patients. Of them, 295 patients treated with expectant management, 45 with embolization of the uterine arteries, 17 with methotrexate therapy and 77 with uterus preserving surgery were reported (Fig. 1).

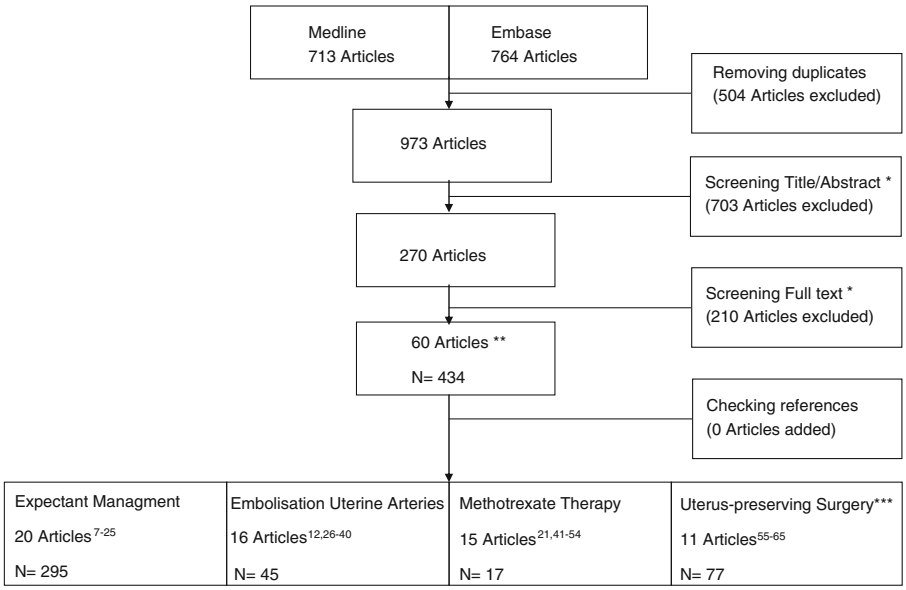
Expectant management (Table 1)

Twenty articles described 295 patients with invasive placentation approached with expectant management [7–26]: a secondary hysterectomy occurred in 55/287 (19%), maternal mortality in 1/295 (0.3%), a subsequent menstruation in 44/49 (90%) and a subsequent pregnancy in 24/36 (67%).

Embolization of the uterine arteries (Table 2)

Sixteen articles reported 45 patients managed with embolization of the uterine arteries [12, 27–41]: a secondary

Fig. 1 Literature search



Search updated on April 14th 2011. N: number of patients.
** using in- and exclusion criteria*
*** Two articles[12,21] described two different uterus preserving approaches*
**** haemostatic sutures or arterial ligation or balloon tamponade*

hysterectomy occurred in 8/45 (18%), a subsequent menstruation in 8/13 (62%) and a subsequent pregnancy in 5/33 (15%). All patients survived until the end of follow up.

Methotrexate therapy (Table 3)

Fifteen articles showed 17 patients receiving methotrexate therapy [22, 42–55]: a secondary hysterectomy occurred in 1/16 (6%), a subsequent menstruation in 4/5 (80%) and a subsequent pregnancy in 1/2 (50%). All patients from the studies survived until the end of follow up.

Uterus preserving surgery (Table 4)

Eleven articles presented 77 patients with uterus preserving surgery [56–66]: a secondary hysterectomy occurred in 24/77 (31%), maternal mortality in 2/55 (4%), a subsequent menstruation in 28/34 (82%) and a subsequent pregnancy in 19/26 (73%).

Comment

The aim of the current review was to evaluate failure and success rates of women with invasive placentation managed with different uterus preserving treatment modalities. The most important gain of uterus preserving treatment is preserving reproductive material. Our results show varying failure and success rates among the different uterus preserving treatment modalities: a secondary hysterectomy was needed in 6–31% and maternal mortality occurred in 0–4% (failure rates); menstruation followed in 62–90% and a subsequent pregnancy occurred in 15–73% (success rates). Our results are based on descriptive data only (case series, case reports and a few cohort studies). Therefore, it is not possible to compare different uterus preserving treatment modalities and no conclusions about the superiority of any modality can be drawn.

Uterus preserving treatment modalities in general

Given the risk of substantial morbidity (including coagulopathy, severe hemorrhage, infection, sepsis, ureteral injury, need for blood transfusion/hysterectomy) and mortality, uterus preserving treatment may have a role in carefully selected patients who desire future fertility [67]. The patient should be counselled about the risk of hysterectomy, blood transfusion and even death. Prophylactic antibiotics are generally administrated to prevent infection [18]. When conservative management is successful, it results in gradual resorption of the placenta or delayed delivery of the placenta [15, 17, 29]. Due to the risk of severe hemorrhage, all obstetric units and practitioners must have the facilities, personnel, and equipment in place to manage this emergency properly and a multidisciplinary approach is recommended [2, 68].

Table 1 Expectant management

Study	Design	Follow up	*N*	Obstetric characteristics		Maternal morbidity/mortality				Subsequent menstruation	Subsequent pregnancy
				Gestational age (weeks)	Mode of delivery	Severe vaginal bleeding	Sepsis	Secondary hysterectomy (indication)	Maternal mortality		
Placenta accreta											
Davis [7]	Case report	5 months	1	NR	CS	NR	NR	1 (hemorrhage, pain)	0	0	0
Bennett [8]	Case series	4 years	1	28	Breech extr	1	NR	0	0	NR	1
		4 years	1	37	Vacuum	0	0	0	0	NR	1
		1 year	1	15	Vaginally	NR	NR	0	0	NR	1
Chianq [9]	Case report	43 days	1	35	CS	1	1	0	0	NR	NR
Jwarah [10]	Case report	2 years	1	39	Vaginally	0	0	0	0	1	1
Kayem [11]	Retr cohort	5 years[a]	19	33 ± 6	CS, vaginally	16/19	3/19	2/19 (hemorrhage)	0/19	NR	2/7 (12 NR)
Kayem [12]	Case series	NR	1	42	CS	0	0	0	0	NR	1
		NR	1	39	CS	0	0	0	0	NR	1
		NR	1	38	CS	0	0	0	0	NR	1
		NR	1	38	CS	0	0	0	0	NR	NR
		NR	1	37	CS	1	0	1 (hemorrhage)	0	0	0
Komulainen [13]	Case series	5 years	1	42	Vaginally	1	0	0	0	1	1
			1	34	Vaginally	1	0	0	0	1	1
Sinha [14]	Case series	9 days	1	37	CS	1	0	1 (hemorrhage)	0	0	0
		7 days	1	20	Vaginally	1	0	0	0	NR	NR
		4 weeks	1	17	Vaginally	1	0	0	0	NR	NR
Matsumura [15]	Case series	6 weeks[b]	5	26–35	CS, vaginally	0/5	0/5	0/5	0/5	5/5	NR
Taylor [16]	Case report	13 weeks	1	39	Vaginally	0	0	0	0	1	NR
Hatfield [17]	Case series	6 weeks[b]	1	Term	Vaginally	0	0	0	0	NR	NR
		13 weeks[b]	1	23	NR	0	0	0	0	1	NR
Sentilhes [18]	Retr cohort	NR	167	NR	CS, vaginally	109/167[a]	8/167	36/167 (hemorrhage)	1/167	NR	NR
Bretelle [19, 20]	Retr cohort	NR	26	NR	NR	10/26[a]	NR	5/26 (hemorrhage)	0/26	21/21	1/1 (20 NR)
Provansal [21]	Retr cohort	NR	46	NR	NR	6/46	NR	6/46 (hemorrhage)	0/46	12/12	12/14
Total			282			148/280	12/205	52/282	1/282	43/46	24/34
						53%	6%	18%	0.3%	93%	71%

Table 1 continued

Study	Design	Follow up	*N*	Obstetric characteristics		Maternal morbidity/mortality				Subsequent menstruation	Subsequent pregnancy
				Gestational age (weeks)	Mode of delivery	Severe vaginal bleeding	Sepsis	Secondary hysterectomy (indication)	Maternal mortality		
Placenta increta											
Sinha [14]	Case report	10 days	1	38	CS	1	0	1 (hemorrhage)	0	NR	NR
Panoskaltsis [22]	Case report	9 months	1	39	Forceps	1	0	0	0	1	NR
Total			2			2/2	0/2	1/2	0/2	1/1	NR
						100%	0%	50%	0%	100%	NR
Placenta percreta											
O'Brien [23]	Retr cohort		8	NR	NR	0/8	NR	NR	0/8	NR	NR
Lee [24]	Case report	15 days	1	17	CS/laparotomy	1	0	0	0	NR	NR
Veenstra [25]	Case report	NR	1	25	Vaginally	1	0	1 (hemorrhage)	0	0	0
Teo [26]	Case report	9 days	1	36	CS	1	0	1 (hemorrhage)	0	0	0
Total			11			3/8	0/3	2/3	0/11	0/2	0/2
						38%	0%	67%	0%	0%	0%
Placenta accreta, increta, percreta											
Total			295			153/290	12/210	55/287	1/295	44/49	24/36
						53%	6%	19%	0.3%	90%	67%

N number of patients, *NR* not reported, *CS* caesarean section

[a] In some patients, hypogastric artery ligation and/or uterine artery embolizations were performed

[b] Placentas were successfully removed transvaginally >6 weeks postpartum

Table 2 Embolization of the uterine arteries

Study	Design	Follow up	*N*	Obstetric characteristics		Maternal morbidity/mortality				Subsequent menstruation	Subsequent pregnancy
				Gestational age (weeks)	Mode of delivery	Severe vaginal bleeding	Sepsis	Secondary hysterectomy (indication)	Maternal mortality		
Placenta accreta											
Kayem [27]	Case report	3 years	1	Term	Vaginally	0	0	0	0	NR	1
Kayem [12]	Case series	NR	1	39	CS	1	0	0	0	NR	1
		NR	1	38	CS	1	1	0	0	NR	NR
Sivan [28]	Retr cohort	NR	23	NR	CS	2/23	NR	2/23 (hemorrhage)	0	NR	3/23
Total			26			4/26	1/3	2/26	0/26	NR	5/25
						15%	33%	8%	0%	NR	20%
Placenta increta											
Breathnach [29]	Case report	12 weeks[a]	1	36	CS	0	1	0	0	1	NR
Takeda [30]	Case report	62 days	1	8	Curettage	0	0	0	0	1	NR
Liao [31]	Case report		1	12	Curettage	1	0	1 (hemorrhage)	0	0	0
Total			3			1/3	1/3	1/3	0/3	2/3	0/1
						33%	33%	33%	0%	67%	0%
Placenta percreta											
Clement [32]	Case series	4 months	1	37	CS	1	NR	0	0	1	0
		4 months	1	25	CS	0	0	0	0	1	0
Bennett [33]	Case series	12 months	1	31	CS	1	0	0	0	1	NR
		4 months	1	36	CS	0	0	0	0	1	NR
Tan [34]	Retr cohort	1 month	5	NR	CS	3/5	NR	1/5 (hemorrhage)	0/5	NR	NR
Diop [35]	Case report	NR	1	38	CS	0	NR	0	0	NR	NR
Luo [36]	Case report	49 days	1	32	CS	1	0	1 (hemorrhage)	0	0	0
Tseng [37]	Case report	5 weeks	1	9	NR	1	0	1 (hemorrhage)	0	0	0
Dinkel [38]	Case report	3 months	1	32	CS	1	0	1 (hemorrhage)	0	0	0
Yee [39]	Case report	164 days	1	34	CS	1	0	0	0	1	NR
Descargues [40]	Case report	1 year	1	36	CS	NR	NR	0	0	1	0
Butt [41]	Case report	15 days[a,b]	1	30	CS	1	0	1 (hemorrhage)	0	0	0
Total			16			10/15	0/8	5/16	0/16	6/10	0/7
						67%	0%	31%	0%	60%	0%
Placenta accreta, increta, percreta											
Total			45			15/44	2/14	8/45	0/45	8/13	5/33
						34%	14%	18%	0%	62%	15%

N number of patients, *NR* not reported, *CS* caesarean section

[a] The placenta was successfully removed transvaginally >6 weeks postpartum

[b] Methotrexate was given intra- and/or postoperatively

Table 3 Methotrexate therapy

Study	Design	Follow up	*N*	Obstetric characteristics		Maternal morbidity/mortality				Subsequent menstruation	Subsequent pregnancy
				Gestational age (weeks)	Mode of delivery	Severe vaginal bleeding	Sepsis	Secondary hysterectomy (indication)	Maternal mortality		
Placenta accreta											
Morken [42]	Case report	14 days	1	30	CS	0	0	0	0	NR	NR
Cole [43]	Case report	6 h[a]	1	NR	Vaginally	0	NR	NR	0	NR	NR
Total			2			0/2	0/1	0/1	0/2	NR	NR
						0	0	0	0	NR	NR
Placenta increta											
Panoskaltsis [22]	Case report	12 months	1	34	Vaginally	0	0	0	0	1	NR
Crespo [44]	Case report	7 months[a]	1	40	CS	0	0	0	0	NR	NR
Wehbe [45]	Case report	2 months	1	NR	Vaginally	NR	NR	0	0	NR	NR
Zepiridis [46]	Case series	12 weeks[a]	1	NR	NR	1	0	0	0	NR	NR
		10 weeks[a]	1	38	Vaginally	0	0	0	0	NR	NR
		7 weeks[b]	1	NR	NR	1	NR	0	0	NR	NR
Adair [47]	Case report	16 weeks[a]	1	NR	Vaginally	1	1	0	0	0	0
Endo [48]	Case report	2 months	1	39	Vaginally	0	0	0	0	1	NR
Total			8			3/7	1/6	0/8	0/8	2/3	0/1
						43%	17%	0%	0%	67%	0%
Placenta percreta											
Otsubo [49]	Case report	6 months	1	36	CS	0	0	0	0	NR	NR
Heiskanen [50]	Case report	16 months	1	29	Vaginally	0	0	0	0	1	NR
Legro [51]	Case report	24 months	1	35	Vaginally	0	0	0	0	1	1
Nijman [52]	Case report	14 weeks	1	NR	Vaginally	0	0	0	0	NR	NR
Henrich [53]	Case report	10 weeks[a]	1	36	CS	0	0	0	0	NR	NR
Sonin [54]	Case report	11 months	1	Term	Vaginally	0	0	0	0	NR	NR
Valayatham [55]	Case report	66 days	1	36	CS	0	0	0	0	NR	NR
Total			7			1/7	0/7	1/7	0/7	2/2	1/1
						14%	0%	14%	0%	100%	100%
Placenta accreta, increta, percreta											
Total			17			4/16	1/14	1/16	0/17	4/5	1/2
						25%	7%	6%	0%	80%	50%

N number of patients, *NR* not reported, *CS* caesarean section

[a] The placenta passed vaginally at the end of follow up

[b] The placenta was removed by curettage/manual removal at the end of follow up

Table 4 Uterus preserving surgery: hemostatic sutures or arterial ligation

Study	Design	Follow up	*N*	Obstetric characteristics		Maternal morbidity/mortality				Subsequent menstruation	Subsequent pregnancy
				Gestational age (weeks)	Mode of delivery	Severe vaginal bleeding	Sepsis	Secondary hysterectomy (indication)	Maternal mortality		
Placenta accreta											
Arduini [56]	Retr cohort	NR	9	NR	CS	5/9	0/9	0/9	0/9	NR	NR
Ferrazzani [57]	Case report	10 months	1	35	CS	0	0	0	0	1	NR
Hung [58]	Case report	68 days	1	29	CS	0	0	0	0	NR	NR
Mechery [59]	Case report	3 weeks	1	32	CS	1	NR[a]	1 (infection)[a]	0	0	0
Shahin [60]	Prosp cohort	1 year	32	34–39	CS	8/32	0/24	8/32 (hemorrhage)	2/32	20/24	18/24
Verspyck [61]	Retr cohort	13 months	6	26–32	CS	5/6[b]	NR	1/6 (hemorrhage)	0/6	5/6	1/1
Read [62]	Retr cohort	18 days	22	NR	CS, vaginally	lNR	NR	14/22 (hemorrhage)	NR	NR	NR
Total			72			19/50	0/35	24/72	2/50	26/32	19/26
						l38%	35%	33%	4%	81%	73%
Placenta percreta											
Wang [63]	Case report	6 months	1	31	CS[c]	1[d]	0	0	0	1	NR
Caliskan [64]	Case series	6 months	1	31	CS	0	0	0	0	1	NR
		6 months	1	38	CS	1	NR	0	0	NR	NR
Nagy [65]	Case report	10 days	1	28	CS[c]	1	0	0	0	NR	NR
Gupta [66]	Case report	10 days	1	36	CS[c]	1	0	0	0	NR	NR
Total			5			4/5	0/4	0/5	0/5	2/2	NR
						80%	0%	0%	0%	100%	NR
Placenta accreta and percreta											
Total			77			23/55	0/39	24/77	2/55	28/34	19/26
						42%	0%	31%	4%	82%	73%

N number of patients, *NR* not reported, *CS* caesarean section

[a] Infection was not further specified

[b] In one patient an immediate secondary embolization was necessary to control a persistent hemorrhage despite an arterial ligation procedure

[c] Methotrexate was given intra- and/or postoperatively

[d] Uterine rupture secondary to placenta percreta

Expectant management

Whether adjuvant therapy in addition to expectant management alone is beneficial is uncertain. Timmermans et al. [6] reported 60 cases with abnormally invasive placentation. Expectant management was successful in 48 cases, but adjuvant therapy (uterine arterial embolization and methotrexate therapy) was employed in 34 cases.

Uterine arterial embolization

Arterial embolization is a viable treatment for postpartum bleeding. A patient with stable vital sings and persistent bleeding, especially if the rate of loss is not excessive, may be a candidate for arterial embolization [2]. A previous Cochrane review [69] compared uterine arterial embolization with hysterectomy for symptomatic uterine fibroids. They concluded that uterine arterial embolization offers an advantage over hysterectomy with regard to a shorter hospital stay and a quicker return to routine activities. Specific complications from this procedure include iliac artery thrombosis, uterine necrosis or sepsis resulting in multiple organ failure. In addition, non-target embolization can cause ischaemic damage to other organs [70].

Methotrexate therapy

Methotrexate disrupts the folic acid pathway in rapidly dividing cells such as trophoblasts. However, the proliferation of trophoblasts in the later stages of pregnancy has been shown to have no role in placental growth [67]. Consequently, the use of methotrexate may not reduce placental volume. This therapy might even be harmful: methotrexate has a immunosuppressive role and therefore could increase the risk of infection or even sepsis, which is already increased in patients with abnormal adherent placentation. Other specific adverse effects are methotrexate-related pancytopenia and nephrotoxicity [71, 72].

Uterus preserving surgery

Uterine compression sutures function in a manner similar to manual compression and are placed to prevent uterine relaxation due to the retained placenta [73]. Arterial occlusion (arterial ligation or balloon tamponade) is indicated for the management of bleeding. In some cases, a combination of both techniques was used [59]. Because we investigated uterus preserving techniques in which the placenta was left in situ, we limited uterus preserving surgery to hemostatic sutures, arterial ligation and balloon tamponade. Other surgical techniques focussing on resection of the invasive placentation are described [74]. In addition to technical advances in vascular control and tissue repair, these surgical resection techniques may contribute to future better uterus preserving surgical options.

Limitations

Due to the descriptive data, this review has a narrative character. The biggest limitation of descriptive data gathered from published case reports and series is that these data are subject to publication bias. The data may be misleading, giving uterus preserving treatment modalities a higher than true success rate. People tend to write up case reports of cases they did that went well; they are less likely to write up the case report about the patients who died or had major complications from uterus preserving treatment. Severe complications are prone to being underreported.

In addition, the cases are limited by the ability to fully determine correct documentation of correct pregnancy or long-term outcome/complications of these pregnancies. In most case reports, data are lacking, which make it difficult to draw conclusions.

Furthermore, categorizing each case specifically based upon the type of uterus preserving treatment modality is difficult since there are varying degrees of placental attachment abnormalities and varying amounts of the placenta which adhere abnormally to the uterus. The uterine preserving treatment modality is a surgical decision based upon particular characteristics of the problem and the expertise of the surgeon. The choice of uterus preserving treatment modality is intricately linked with the degree of placental volume involved. Specific uterus preserving treatment modalities may have the best outcome because the volume of placental involvement is less. Bad outcomes may be employed in large volume placental involvement. The results may simply be a function of disease severity.

However, evaluation of uterus preserving treatment is important and of great clinical use because of the possibility of a subsequent pregnancy. Large-scale studies are required using prospective and repeated measure designs to further evaluate the safety, efficacy and fertility effects.

Conclusion

This review indicates that different uterus preserving treatment modalities may be effective in managing invasive placentation. Despite the extensive review of the literature, no conclusions about the superiority of any modality can be drawn.

Conflict of interest The authors declare that they have no conflict of interest.

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Appendix 1

Search Medline

((((((“placenta”[Title/Abstract]) OR “placentas”[Title/Abstract]) OR “placenta’s”[Title/Abstract])) AND ((((((((“increta”[Title/Abstract] OR “increta/percreta”[Title/Abstract])) OR “accreta”[Title/Abstract]) OR “accreta/increta/percreta”[Title/Abstract]) OR “accreta/increta”[Title/Abstract]) OR “accreta/percreta/increta”[Title/Abstract])) OR (“percreta”[Title/Abstract] OR “percreta/increta”[Title/Abstract] OR “percreta involving”[Title/Abstract] OR “percreta placenta”[Title/Abstract] OR “percreta presenting”[Title/Abstract] OR “percreta, placenta”[Title/Abstract]))))) AND (((((((((“expectative”[Title/Abstract] OR “expectative approach”[Title/Abstract] OR “expectative attitude”[Title/Abstract] OR “expectative management”[Title/Abstract] OR “expectative policy”[Title/Abstract] OR “expectative treatment”[Title/Abstract])) OR “expectatively”[Title/Abstract]) OR “expectatory”[Title/Abstract])) OR (((“conservative”[Title/Abstract]) OR conventional[Title/Abstract]) OR traditional[Title/Abstract])) OR ((“hysterectomy”[Title/Abstract]) OR “hysterectomies”[Title/Abstract])) OR ((((((((((“surgery”[Title/Abstract]) OR “surgeries”[Title/Abstract]) OR “resection”[Title/Abstract]) OR “resections”[Title/Abstract]) OR “resections”[Title/Abstract]) OR “surgical”[Title/Abstract]) OR “surgically”[Title/Abstract]) OR “procedure”[Title/Abstract]) OR “procedures”[Title/Abstract]) OR “operation”[Title/Abstract]) OR “operations”[Title/Abstract]) OR “manipulation”[Title/Abstract]) OR “manipulations”[Title/Abstract])) OR ((((((((((((((“treatment”[Title/Abstract]) OR “treatments”[Title/Abstract]) OR “care”[Title/Abstract]) OR “procedure”[Title/Abstract]) OR “procedure”[Title/Abstract]) OR “procedures”[Title/Abstract]) OR “strategy”[Title/Abstract]) OR “strategies”[Title/Abstract]) OR “usage”[Title/Abstract]) OR “way”[Title/Abstract]) OR “management”[Title/Abstract]) OR “managements”[Title/Abstract]) OR “guidance”[Title/Abstract]) OR “guidances”[Title/Abstract]) OR “support”[Title/Abstract]) OR “therapy”[Title/Abstract]) OR “therapies”[Title/Abstract])).

Search Embase

(placenta:ab,ti OR placentas:ab,ti OR placentas:ab,ti) AND (increta:ab,ti OR accreta:ab,ti OR percreta:ab,ti) AND (expectative:ab,ti OR approach:ab,ti OR attitude:ab,ti OR management:ab,ti OR policy:ab,ti OR treatment:ab,ti OR expectatively:ab,ti OR expectatory:ab,ti OR conservative:ab,ti OR conventional:ab,ti OR traditional:ab,ti OR hysterectomy:ab,ti OR hysterectomies:ab,ti OR surgery:ab,ti OR surgeries:ab,ti OR resection:ab,ti OR resections:ab,ti OR resections:ab,ti OR surgical:ab,ti OR surgically:ab,ti OR procedure:ab,ti OR procedures:ab,ti OR operation:ab,ti OR operations:ab,ti OR manipulation:ab,ti OR manipulations:ab,ti OR treatment:ab,ti OR treatments:ab,ti OR care:ab,ti OR procedure:ab,ti OR procedure:ab,ti OR procedures:ab,ti OR strategy:ab,ti OR strategies:ab,ti OR usage:ab,ti OR way:ab,ti OR management:ab,ti OR managements:ab,ti OR guidance:ab,ti OR guidances:ab,ti OR support:ab,ti OR therapy:ab,ti OR therapies:ab,ti).

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