

**Supplemental Table S1-** Summary of the systematic review aims. The primary aim was formulated on the basis of population, exposure and outcome question.

N.	Primary question
1	In pregnant women affected by first-trimester spontaneous uterine rupture, what outcomes can be expected in terms of hysterectomy prevalence?
	<b>Secondary questions</b>
2	In pregnant women affected by first-trimester spontaneous uterine rupture, what outcomes can be expected in addition to hysterectomy in the first trimester?
3	In pregnant women affected by first-trimester spontaneous uterine rupture, what factors are associated?
4	In pregnant women affected by first-trimester spontaneous uterine rupture, what is the management?

**Supplemental Table S2-** Summary of database queries.

Database	Query	Date	Number of items
PubMed	(first trimester AND uterine rupture) OR (early rupture AND gravid uterus) OR (rupture of the uterus in the first trimester) OR (pregnancy hemoperitoneum AND placenta percreta) OR (cesarean scar AND uterine rupture AND first trimester) OR (extrauterine pregnancy AND early uterine rupture)	10.04.2020	586
Scopus	(first AND trimester AND uterine AND rupture) OR early AND rupture AND gravid AND uterus) OR (rupture AND of AND the AND uterus AND in AND the AND first AND trimester) OR (pregnancy AND hemoperitoneum AND placenta AND percreta) OR (cesarean AND scar AND uterine AND rupture AND first AND trimester) OR (extrauterine AND pregnancy AND early AND uterine AND rupture) AND (LIMIT-TO ( LANGUAGE , "English" ) )	10.04.2020	4048

**Supplemental Table S3-** Maternal features and previous surgery.

Author	Age (years)	Para	Comorbidities	PS	Type of PS	Months*	Singleton/twin pregnancy
Hefny [25]	19	0	NK	No		NA	Singleton
Masia [46]	24	0	Turner's syndrome	Yes	D&C	NA	Singleton
Bandarian [14]	32	1-2	NK	Yes	CS + D&C	NA	Singleton
Akbaz [9]	36	≥3	NK	No		NA	Singleton
Pandey [54]	30	1-2	NK	No		NA	Singleton
Singh 2013 [66]	24	0	NK	No		NA	Singleton
Shaik [62]	24	1-2	No	Yes	Myomectomy + CS	NA	Singleton
Shah [61]	39	1-2	NK	Yes	CS	NA	Singleton
Amro 1 [12]	27	1-2	NK	No		NA	Singleton
Amro 1 [12]	34	1-2	NK	No		NA	Singleton
Sultana [70]	25	1-2	NK	Yes	CS	NA	Singleton
Ijaz [27]	34	1-2	NK	Yes	D&C	NA	Singleton
Kim [37]	43	1-2	NK	Yes	CS	24	Singleton
Visariya [78]	23	1-2	NK	Yes	CS	6	Singleton
Jang [31]	27	1-2	NK	Yes	D&C	NA	Singleton
Galinski [24]	22	0	NK	No		NA	Singleton

Mahajan [43]	34	0	Fibroids	Yes	Myomectomy	36	Singleton
Dandawate [20]	39	1-2	Anemia	Yes	CS	36	Singleton
Liao [41]	29	0	No	Yes	Left salpingectomy	NA	Twins
Willmott [79]	24	0	No	No		NA	Singleton
Kapoor [35]	29	1-2	NK	No		NA	Twins
Tanyi [73]	28	≥3	No	Yes	CS + D&C	NA	Singleton
Matsuo [47]	43	1-2	Adenomyosis	Yes	CS + D&C	96	Singleton
Panayotidis [53]	32	0	No	No		NA	Singleton
Khan [36]	33	1-2	NK	Yes	CS	18	Singleton
Dabulis [19]	34	≥3	NK	Yes	CS + D&C	NA	Singleton
Ismail [28]	35	1-2	NK	Yes	CS	NA	Singleton
Tufail [76]	36	0	No	Yes	D&C	6	Singleton
Park [55]	27	1-2	NK	No		NA	Twins
Esmans [23]	41	1-2	No	Yes	D&C	NA	Singleton
Porcu [57]	36	0	NK	No		NA	Singleton
Liang [40]	34	1-2	NK	Yes	CS	36	Singleton
Singh 2000 [64]	30	≥3	No	No		NA	Singleton
Jwarah [33]	36	1-2		Yes	CS	NA	Singleton
Marcus [45]	24	1-2	NK	Yes	CS	NA	Singleton
Hamsho [10]	34	≥3	Obesity	Yes	CS	8	Singleton
DeRoux [21]	22	1-2	Sickle cell anemia	Yes	D&C	NA	Singleton
Ito [29]	19	1-2	NK	Yes	CS	72	Singleton
Ozeren [52]	32	0	NK	Yes	Myomectomy	30	Singleton
Arbab 1 [13]	28	0	Endometriosis, hyperprolactinaemia	Yes	Cornual resection	12	Singleton
Arbab 1 [13]	28	1-2	NK	Yes	Cornual resection	12	Twins
Smith [68]	34	≥3	Baltic myoclonus	Yes	CS	NA	Singleton
Biljan [16]	39	≥3	Adenomyosis	No		NA	Singleton
Abbas 2018A [8]	27	1-2	NK	Yes	CS	24	Singleton
Dibbs [22]	29	0	LES	Yes	D&C	84	Singleton
Pridjian [58]	27	0	Sarcoma, skeletal hypoplasia, delayed puberty	No		NA	Singleton
Marcellus [44]	34	1-2	Fibroids	Yes	CS	60	Singleton
Iddenden [26]	32	≥3	No	No		NA	Singleton
Jerve [32]	26	0	No	No		NA	Singleton
Lazarus [38]	39	1-2	NK	Yes	CS	7	Singleton
Bruand [17]	18	0		Yes	D&C	NA	Singleton
Saghafi [60]	34	1-2	No	Yes	CS	NA	Singleton
Takashima [72]	27	1-2	Infertility, fibroids	Yes	Myomectomy + CS	12	Singleton
Ambrogi [11]	32	1-2	NK	Yes	CS	NA	Singleton
Bechem [15]	43	0	NK	Yes	D&C	NA	Singleton
Lincenberg [42]	27	≥3	No	Yes	CS	NA	Twins
Okada [51]	34	0	Fibroids, adenomyosis	Yes	Myomectomy	7	Singleton
Sherer [63]	36	≥3	No	Yes	CS	NA	Singleton
Tola [75]	34	0	NK	No		NA	Singleton
Singh 2012 [65]	24	1-2	NK	No		NA	Singleton
Nassar [50]	26	1-2	NK	Yes	Uterine perforation + D&C	4	Singleton
Peysen [56]	35	≥3	No	Yes	D&C	NA	Singleton
Lee [39]	32	1-2	NK	No		NA	Singleton
Abbas 2018 [7]	24	1-2	NK	No		NA	Singleton
Abbas 2017 [6]	25	1-2	NK	Yes	CS	24	Singleton

Vaezi [77]	34	1-2	No	No		NA	Singleton
Cho [18]	24	0	No	No		NA	Singleton
Rouzi [59]	41	≥3	NK	Yes	CS	NA	Singleton
Mosad [49]	28	1-2	NK	Yes	CS	6	Singleton
Sujatha [69]	32	1-2	NK	Yes	CS	36	Singleton
Kabra [34]	43	≥3	NL	Yes	CS	48	Singleton
Sinha [67]	39	≥3	NK	Yes	CS + repair	24	Singleton
Miranda [48]	29	1-2	Obesity	Yes	CS	10	Singleton
Taskin [74]	34	1-2	NK	Yes	CS	NA	Singleton
Surve [71]	39	1-2	NK	Yes	CS	36	Singleton
Jain [30]	25	≥3	NK	Yes	CS	12	Singleton

\* months from previous surgery

PS = previous surgery

D&C = dilation and curettage

CS = cesarean section

NK = not known

**Supplemental Table 4-** Management of first trimester uterine rupture cases.

Author	Diagnostic intervention	Life-saving surgery	LPS	LPT	Conversion	Defect repair	Site of rupture	Hysterectomy	Total blood loss
Hefny [25]	Yes	No	No	Yes	No	Yes	Rudimentary horn	No	2500 mL
Masia [46]	No	Yes	No	No	Yes	No	Fundus	Yes	1200 mL
Bandarian [14]	No	Yes	No	Yes	No	Yes	Previous CS	No	1500 mL
Akbaz [9]	No	Yes	No	Yes	No	No	Left side	Yes	NK
Pandey [54]	No	Yes	No	Yes	No	No	Rudimentary horn	No	1000 mL
Singh 2013 [66]	Yes	No	No	Yes	No	Yes	Rudimentary horn	No	2500 mL
Shaik [62]	No	Yes	No	Yes	No	Yes	Fundus	No	2000 mL
Shah [61]	No	Yes	No	Yes	No	No	Previous CS	Yes	3000 mL
Amro 1 [12]	Yes	No	Yes	No	No	Yes	Fundus	No	2000 mL
Amro 1 [12]	Yes	No	Yes	No	No	Yes	Fundus	No	1500 mL
Sultana [70]	Yes	Yes	No	Yes	No	No	Previous CS	Yes	NK
Ijaz [27]	No	Yes	No	No	Yes	Yes	Fundus	No	1000 mL
Kim [90]	No	Yes	Yes	No	No	Yes	Left uterine horn	No	500 mL
Visariya [78]	No	Yes	No	Yes	No	Yes	Previous CS	No	1000 mL
Jang [31]	Yes	No	No	No	Yes	No	Fundus	Yes	1800 mL
Galinski [24]	No	Yes	No	Yes	No	Yes	Rudimentary horn	No	1500 mL
Mahajan [43]	Yes	No	Yes	No	No	Yes	Previous myomectomy	No	1000 mL
Dandawate [20]	Yes	No	No	No	Yes	No	Previous CS	Yes	5500 mL
Liao [41]	Yes	No	Yes	No	No	Yes	Previous section	No	0 mL
Willmott [79]	Yes	No	No	Yes	No	Yes	Fundus	No	4500 mL
Kapoor [35]	Yes	No	No	No	Yes	Yes	Rudimentary horn	No	5000 mL
Tanyi [73]	No	No	No	Yes	No	No	Anterior wall	Yes	400 mL
Matsuo [91]	No	No	No	Yes	No	Yes	Previous CS	No	240 mL
Panayotidis [92]	No	Yes	No	Yes	No	Yes	Rudimentary horn	No	3000 mL
Khan [36]	No	Yes	No	Yes	No	Yes	Previous CS	No	2000 mL
Dabulis [19]	No	Yes	No	Yes	No	No	Previous CS	Yes	3500 mL

Ismail [28]	No	No	No	No	No	No	Previous CS	No	NK
Tufail [76]	No	Yes	No	Yes	No	Yes	Rudimentary horn	No	NK
Park [55]	No	No	No	Yes	No	Yes	Fundus	No	NK
Esmans [23]	No	Yes	No	Yes	No	No	Fundus	Yes	3000 mL
Porcu [57]	Yes	No	No	No	Yes	Yes	Anterior wall	No	1500 mL
Liang [40]	No	Yes	No	Yes	No	No	Previous CS	Yes	2700 mL
Singh 2000 [64]	No	Yes	No	Yes	No	No	Fundus	Yes	1500 mL
Jwarah [33]	Yes	Yes	No	Yes	No	No	Previous CS	Yes	NK
Marcus [45]	Yes	No	No	Yes	No	No	Previous CS	Yes	NK
Hamsho [10]	No	Yes	No	Yes	No	No	Previous CS	Yes	2000 mL
DeRoux [21]	No	No	No	No	No	No	Fundus	No	7500 mL
Ito [29]	Yes	No	No	Yes	No	Yes	Previous CS	No	0 mL
Ozeren [52]	No	Yes	No	Yes	No	Yes	Previous CS	No	2000 mL
Arbab 1 [13]	No	Yes	No	Yes	No	Yes	Left side	No	severe hemorrhagia
Arbab 1 [13]	Yes	Yes	No	No	Yes	No	Righ side	Yes	severe hemorrhagia
Smith [68]	No	Yes	No	Yes	No	Yes	Fundus	No	1700 mL
Biljan [16]	No	Yes	No	Yes	No	Yes	Fundus	No	2000 mL
Abbas 2018A [8]	Yes	Yes	No	Yes	No	Yes	Previous CS	No	1500 mL
Dibbs [22]	Yes	No	No	Yes	No	Yes	Fundus	No	2000 mL
Pridjian [58]	No	Yes	No	Yes	No	No	Anterior wall	Yes	1000 mL
Marcellus [44]	No	Yes	No	Yes	No	No	Previous CS	Yes	2000 mL
Iddenden [26]	No	Yes	No	Yes	No	Yes	Fundus	No	3000 mL
Jerve [32]	No	Yes	No	Yes	No	Yes	Lower segment	No	NK
Lazarus [38]	No	Yes	No	Yes	No	No	Previous CS	Yes	NK
Bruand [17]	Yes	Yes	Yes	No	Yes	No	Right uterine horn	No	1000 mL
Saghafi [60]	Yes	No	No	Yes	No	Yes	Previous CS	No	100 mL
Takashima [72]	No	Yes	No	Yes	No	No	Previous CS	Yes	1300 mL
Ambrogi [11]	No	No	No	No	Yes	No	Posterior wall	Yes	NK
Bechem [15]	No	No	No	Yes	No	Yes	Fundus	No	NK
Lincenberg [42]	Yes	No	No	No	Yes	Yes	Previous CS	No	900 mL
Okada [51]	Yes	No	No	Yes	No	Yes	Fundus	No	860 mL
Sherer [63]	Yes	No	No	No	Yes	Yes	Previous CS	No	NK
Tola [75]	No	Yes	No	Yes	No	Yes	Rudimentary horn	No	1000 mL
Singh 2012 [65]	Yes	Yes	No	Yes	No	Yes	Rudimentary horn fundus	No	2500 mL
Nassar [50]	Yes	No	No	Yes	No	Yes	Fundus	No	1500 mL
Peyser [56]	No	Yes	No	Yes	No	No	Righ side	Yes	NK
Lee [39]	Yes	No	Yes	No	No	No	Fundus	Yes	1000 mL
Abbas 2018 [7]	Yes	No	No	Yes	No	No	Posterior wall	No	2500 mL
Abbas 2017 [6]	No	Yes	No	Yes	No	Yes	Previous CS	No	1000 mL
Vaezi [77]	Yes	No	No	Yes	No	Yes	Posterior wall	No	2000 mL
Cho [18]	No	Yes	No	Yes	No	Yes	Fundus	No	2500 mL
Rouzi [59]	No	Yes	No	Yes	No	No	Previous CS	Yes	NK
Mosad [49]	No	Yes	No	Yes	No	Yes	Previous CS	No	NK
Sujatha [69]	No	Yes	No	Yes	No	Yes	Previous CS	No	1800 mL
Kabra [34]	No	Yes	No	Yes	No	Yes	Previous CS	No	1500 mL
Sinha [67]	No	Yes	No	Yes	No	Yes	Fundus	No	1000 mL

Miranda [48]	Yes	No	No	Yes	No	Yes	Previous CS	No	NK
Taskin [74]	Yes	No	No	Yes	No	Yes	Previous CS	No	NK
Surve [71]	No	Yes	No	Yes	No	Yes	Previous CS	No	2000 mL
Jain [30]	No	Yes	No	Yes	No	Yes	Previous CS	No	2000 mL

LPS = laparoscopy

LPT = laparotomy

NK = not known

**Supplemental Table S5-** Associated factors with first trimester uterine rupture and histological findings after surgical intervention.

Author	ART	Drugs	Uterine anomalies	Type of uterine anomalies	CSP	PAS	Histology
Hefny [25]	No	No	Yes	Bicornuate uterus	No	No	NK
Masia [46]	Yes	No	No		No	Yes	NK
Bandarian [14]	No	No	No		Yes	No	NK
Akbas [9]	No	No	No		No	No	NK
Pandey [54]	No	No	Yes	Rudimentary horn	No	No	NK
Singh 2013 [66]	No	No	Yes	Bicornuate uterus	No	No	No histopathological abnormalities
Shaik [62]	No	No	No		Yes	NK	NK
Shah [61]	No	Yes	No		Yes	Yes	NK
Amro 1 [12]	No	No	No		No	No	NK
Amro 1 [12]	Yes	No	No		No	No	NK
Sultana [70]	No	No	No		Yes	NK	NK
Ijaz [27]	No	No	No		No	No	No histopathological abnormalities
Kim [90]	No	Yes	No		No	No	No histopathological abnormalities
Visariya [78]	No	No	No		Yes	NK	NK
Jang [31]	No	No	No		No	No	Accretism
Galinski [24]	No	No	Yes	Rudimentary horn	No	No	No histopathological abnormalities
Mahajan [43]	No	No	No		No	No	NK
Dandawate [20]	No	No	No		Yes	Yes	Accretism
Liao [41]	Yes	No	No		No	No	No histopathological abnormalities
Willmott [79]	No	Yes	No		No	No	No histopathological abnormalities
Kapoor [35]	No	No	Yes	Rudimentary-horn	No	No	Rudimentary horn
Tanyi [73]	No	No	No		No	Yes	Accretism
Matsuo [91]	No	No	No		No	No	NK
Panayotidis [92]	No	No	Yes	Rudimentary-horn	No	No	No histopathological abnormalities
Khan [36]	No	Yes	No		NK	NK	NK
Dabulis [19]	No	No	No		Yes	Yes	Accretism
Ismail [28]	No	Yes	No		No	No	No histopathological abnormalities
Tufail [76]	No	No	Yes	Rudimentary horn	No	No	No histopathological abnormalities
Park [55]	No	No	No		No	No	NK
Esmans [23]	No	No	No		No	Yes	Accretism
Porcu [57]	No	No	Yes	T-shaped and hypoplastic uterus	No	No	NK
Liang [40]	No	No	No		Yes	Yes	Accretism
Singh 2000 [64]	No	No	Yes	Rudimentary-horn	No	No	No histopathological abnormalities
Jwarah [33]	No	Yes	No		NK	NK	NK
Marcus [45]	No	No	No		Yes	Yes	NK
Hamsho [10]	No	No	No		Yes	NK	NK
DeRoux [21]	No	No	No		No	Yes	Accretism
Ito [29]	Yes	No	No		Yes	NK	NK
Ozeren [52]	No	No	No		No	No	NK
Arbab 1 [13]	Yes	No	No		No	No	No histopathological abnormalities
Arbab 1 [13]	Yes	No	No		No	Yes	Accretism

Smith [68]	No	No	No		No	Yes	NK
Biljan [16]	No	No	No		No	No	NK
Abbas 2018A [8]	No	No	No		Yes	Yes	NK
Dibbs [22]	No	No	No		No	No	Abnormal intermediate trophoblast
Pridjian [58]	No	No	NK		No	Yes	Accretism
Marcellus [44]	No	No	No		No	Yes	Accretism
Iddenden [26]	No	No	No		No	No	NK
Jerve [32]	No	Yes	No		No	No	NK
Lazarus [38]	No	No	No		Yes	NK	NK
Bruand [17]	No	No	Yes	Rudimentary horn	NK	NK	NK
Saghafi [60]	No	No	No		No	No	No histopathological abnormalities
Takashima [72]	Yes	No	No		Yes	NK	NK
Ambrogi [11]	No	No	No		No	Yes	Accretism
Bechem [15]	No	No	No		No	No	NK
Lincenberg [42]	No	No	No		Yes	Yes	NK
Okada [51]	Yes	No	No		No	No	NK
Sherer [63]	No	No	No		Yes	Yes	Choriocarcinoma
Tola [75]	No	No	Yes	Bicornuate uterus	No	No	NK
Singh 2012 [65]	No	No	Yes	Bicornuate uterus, rudimentary horn	No	NK	NK
Nassar [50]	No	No	No		No	No	No histopathological abnormalities
Peyser [56]	No	Yes	No		No	No	NK
Lee [39]	No	No	No		No	Yes	Accretism
Abbas 2018 [7]	No	No	No		No	NK	NK
Abbas 2017 [6]	No	No	No		Yes	NK	NK
Vaezi [77]	No	No	No		No	NK	NK
Cho [18]	Yes	No	No		No	Yes	Accretism
Rouzi [59]	No	Yes	No		Yes	NK	NK
Mosad [49]	No	No	No		Yes	Yes	No histopathological abnormalities
Sujatha [69]	No	No	No		Yes	No	NK
Kabra [34]	No	No	No		Yes	NK	CSP
Sinha [67]	No	No	No		No	No	NK
Miranda [48]	No	No	No		Yes	NK	NK
Taskin [74]	No	No	No		NK	NK	NK
Surve [71]	No	No	No		Yes	NK	NK
Jain [30]	No	No	No		Yes	NK	NK

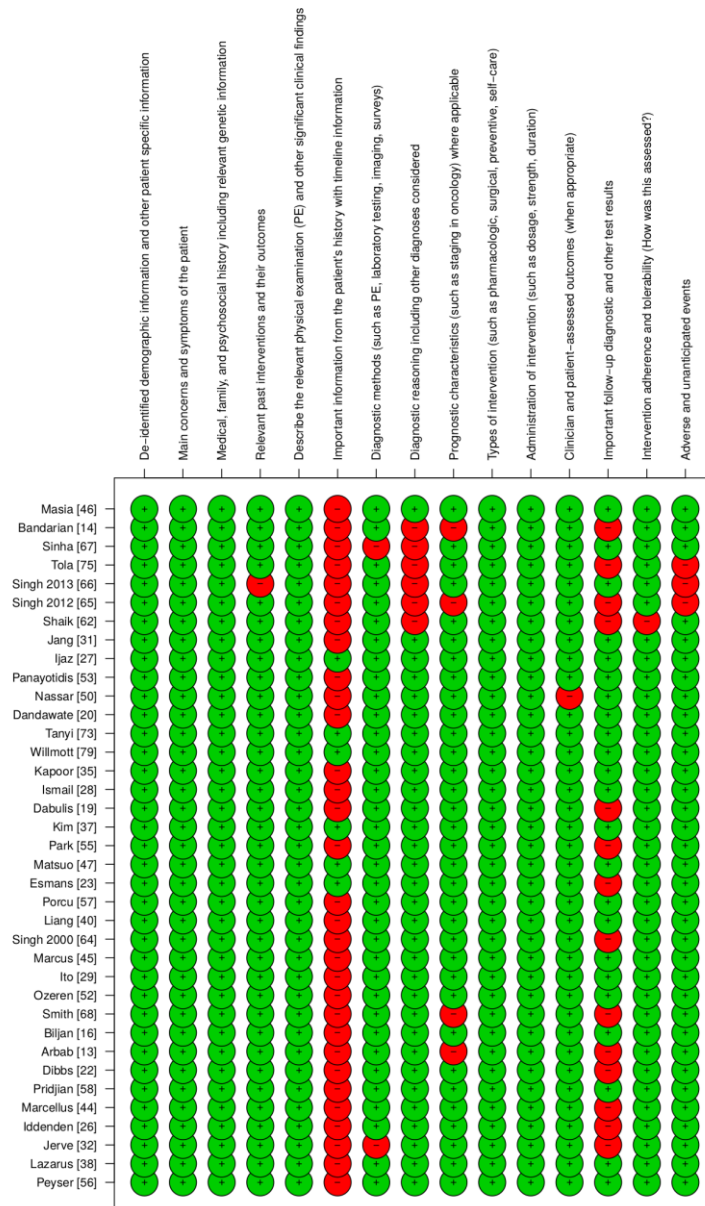
CSP = cesarean scar pregnancy

PAS = placenta accreta spectrum

RVF = retroverse uterus

ART = assisted reproductive technology.

**Supplemental Figure S1-** Summary diagram of the methodological quality analysis of the included studies (part 1). Color legend: green (+) item present (high quality), yellow (?) not clear, and red (-) item missing (low quality).



**Supplemental Figure 2-** Summary diagram of the methodological quality analysis of the included studies (part 2). Color legend: green (+) item present (high quality), yellow (?) not clear, and red (-) item missing (low quality).





# Supplemental List S1

## INCLUDED STUDIES

Studies that fulfilled the requirements.

## References

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## **EXCLUDED STUDIES**

No uterine rupture [1–25]

Gestational age equal or greater 14 weeks [26–67]

Extra-uterine pregnancy [68, 69]

Other reasons (non-English literature, duplicate publication, or non reporting clinical data) [70–91]

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