

## Profile of Placenta Accreta Spectrum in Dr. Soetomo General Hospital Between 2017-2021

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### ABSTRACT

**Background:** Placenta accreta spectrum is the cause of profuse bleeding and is hard to control during operation. In this study, during the period 2017 – 2021, 431 cases of placenta were obtained based on the number of patients treated at Dr. Soetomo Hospital. In developed countries, the increase of Caesar operation is associated with an increased incidence of placenta accreta. As the age of pregnant women gets later, late delivery appears to be a risk factor in developed countries. In developing countries, the risk factors for placenta accreta are multigravida and high parity, and because many women give birth at the end of their reproductive period and old gestational age. **Methods:** Observational descriptive research with a retrospective approach. The samples came from histopathological examination and specimens of placenta accreta spectrum at Dr. Soetomo General Hospital during the 2017-2021 period. **Results:** Based on the results of clinical examination, the distribution of placenta accreta cases was the highest at 69%, then with placenta accreta at 26%, and percreta at 6%. Most of the patients with a history of caesarean section (53%) with a former caesarean section 1 time, increasing the risk of placenta accreta spectrum. **Conclusions:** For 5 years, based on the results of clinical examination, the highest results were with placenta accreta (69%), with the most histopathological results of placenta accreta (69%), with the history of curettage (22%) and a history of caesarean section (53%), thereby increasing the risk of placenta accreta spectrum.

**Keywords:** placenta accreta spectrum; accrete; increta; percreta.

### INTRODUCTION

Placenta accreta spectrum is the cause of severe bleeding and is difficult to control during surgery at Dr. Soetomo the incidence rate increased with a total of 417 cases until 2021.

In developed countries, the increase in caesarean section is associated with an increased incidence of placenta accreta. The incidence of placenta accreta has increased and seems to be directly proportional to the increase in caesarean births. In developing countries, the risk factors for placenta accreta are multigravida and high parity, because many women give birth at the end of the reproductive period and are of advanced gestation age [13, 14].

Placenta accreta spectrum is defined as an abnormal invasion of trophoblasts in the myometrium. When invasive trophoblastic cells on the surface of the myometrium are called grade I. Grade II is when the invasion reaches the myometrium, and grade III if the invasion is up to the uterine serosa or urinary vesica [3].

The incidence of placenta accreta spectrum has been described in various clinical studies in many literatures. The patient population in Indonesia has also begun to increase. In this retrospective study, we want to provide an overview of incidents and insights about the accreta, increta, and percreta placenta at Dr. Soetomo Surabaya Hospital for the 2017-2021 period. As well as to find out the disease profile including preoperative diagnosis, histopathological diagnosis, number of gravida, and history of cesarean section at Dr. Soetomo Surabaya Hospital for the 2017-2021 period.

### METHODS

Observational descriptive research with a retrospective approach. The samples came from histopathological examination and specimens of placenta accreta spectrum at Dr. Soetomo General Hospital during the 2017-2021 period.

## RESULTS

### Characteristics of Research Sample

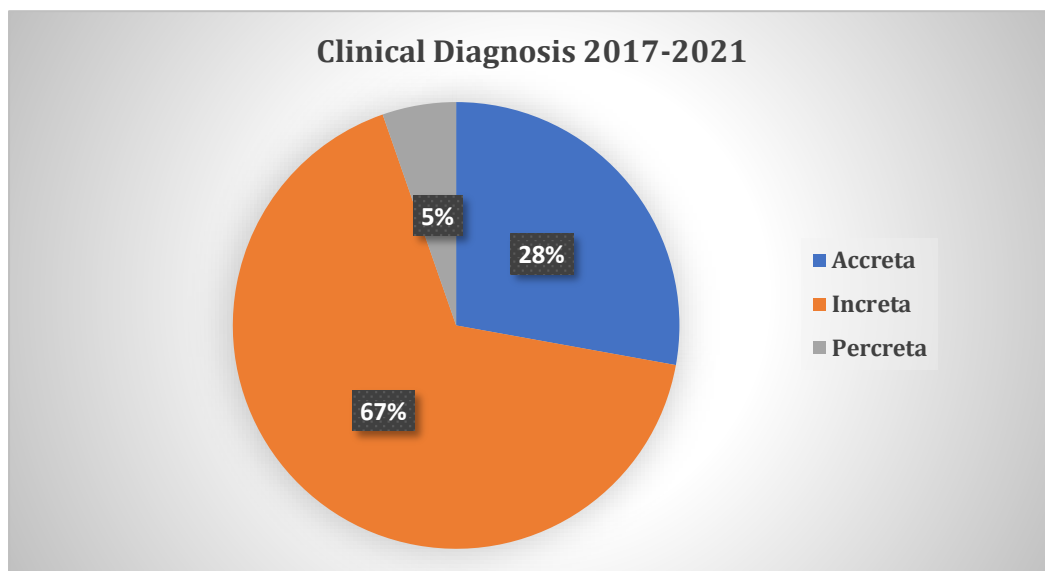
This study descriptively analyzed the histopathological profile of patients with placenta accreta, increta, and percreta. The data obtained from this study included histopathological diagnosis, number of gravidas, history of cesarean section, and curettage history.

In this study, during the period 2017 – 2021, 421 cases of placenta were obtained based on the number of patients treated at Dr. Soetomo Hospital. The distribution of placenta cases per year based on clinical diagnosis. The most cases were in 2020 with 149 cases, followed in 2019 with 98 cases, then in 2018 with 74 cases, in 2017 with 64 cases, and finally in 2021 with 46 cases.

The distribution of placenta cases based on the results of histopathological examinations for 5 years was obtained the most were increta 69%, then with placenta accreta 26%, and percreta 6%.

The total number of examinations based on the history of cesarean section in placenta cases at Dr. Soetomo Surabaya Hospital during the period 2017-2021 is divided into normal delivery, history of 1-time cesarean section, and more than 1 time. During that period, the history of 1x cesarean section was 53%, the history of caesarean section was more than 1x 35%, and the case of normal birth history was 12%. In 5 years, 70% of patients who have never done curettage was 70%, those who have curettage 1x was 22% and those who have curettage more than 1x was 8%.

Within 5 years patients the distribution of placental cases was based on gravida. The gravida group is divided into gravida 2 times and gravida more than 2 times. For gravida above 2 times as many as 69% of cases and gravida 2 times as many as 31% of cases.

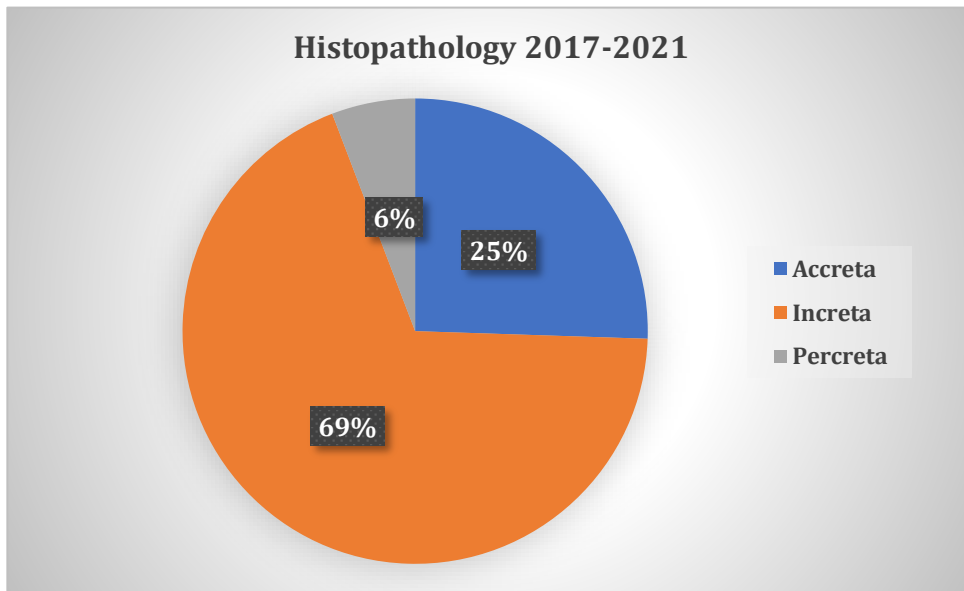


**FIGURE 1:** Distribution of placenta accreta cases in the spectrum (in percentage) in the period 2017-2021.

The total number of examinations based on preoperative diagnosis in placental cases examined at the Laboratory of Anatomic Pathology of Dr. Soetomo Hospital Surabaya during the period 2017-2021 was 431 cases.

The most cases in 2020 with 149 cases consisting of 59 cases of placenta accreta, 87 cases of placenta increta, and 3 cases of placenta percreta. The second highest was followed in 2019 with 98 cases consisting of 23 cases of placenta accreta, 69 cases of placenta increta, and 6 cases of placenta percreta.

The third highest was in 2018 with 74 cases, consisting of 16 cases of placenta accreta, 55 cases of placenta increta, and 3 cases of placenta percreta. The fourth highest was in 2017 with 64 cases, consisting of 10 cases of placenta accreta, 48 cases of placenta increta, and 6 cases of placenta percreta. The number of cases in 2021 was 12 cases consisting of placenta increta, 31 cases of placenta accreta, and 4 cases of placenta percreta.

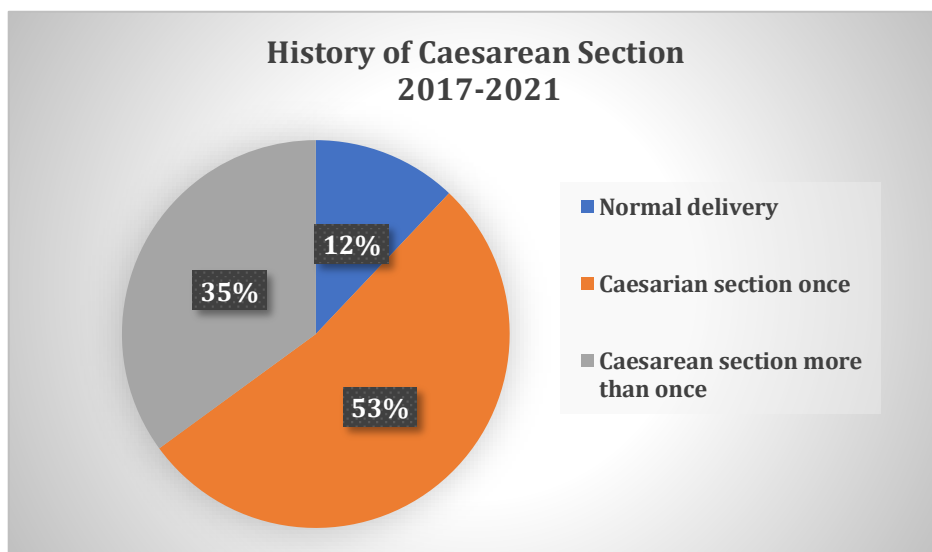


**FIGURE 2:** Distribution of placenta cases based on the results of histopathological examinations for the 2017-2021 period (in percentages).

The total number of examinations based on postoperative diagnosis in placental cases examined at the Laboratory of Anatomic Pathology of Dr. Soetomo Hospital Surabaya during the period 2017-2021 was 431 cases.

The distribution of placenta cases based on the results of histopathological examinations for 5 years was obtained the most without histopathological examination results of placenta increta 69%, then with placenta accreta 26%, and percreta 6%.

The most cases in 2020 with 148 cases consisting of 52 cases of placenta accreta, 90 cases of placenta increta, and 6 cases of placenta percreta. The second highest was followed in 2019 with 98 cases consisting of 20 cases of placenta accreta, 72 cases of placenta increta, and 6 cases of placenta percreta. The third highest was in 2018 with 74 cases, consisting of 16 cases of placenta accreta, 55 cases of placenta increta, and 3 cases of placenta percreta. The fourth highest was in 2017 with 64 cases, consisting of 10 cases of placenta accreta, 48 cases of placenta increta, and 6 cases of placenta percreta. The number of cases in 2021 was 12 cases consisting of placenta increta, 31 cases of placenta accreta, and 4 cases of placenta percreta.

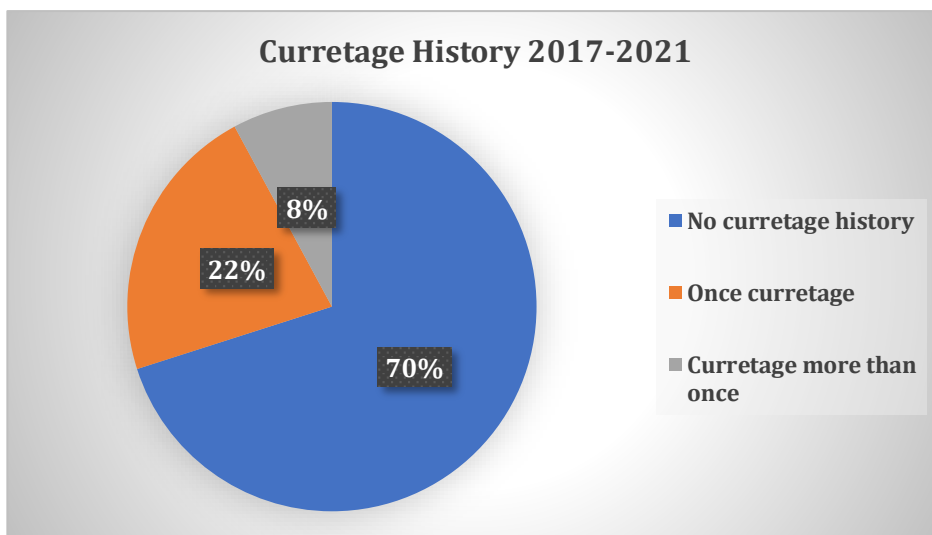


**FIGURE 3:** Distribution of placenta cases based on cesarean history (in percentage). The cesarean section history group was divided into normal birth history, 1-time cesarean section history, and more than 1-time cesarean section history.

The total number of examinations based on the history of cesarean section in placenta cases at Dr. Soetomo Surabaya Hospital during the period 2017-2021 is divided into a history of 1 cesarean section and more than 1 time. During that period, the history of 1x cesarean section was 53%, the history of cesarean section was more than 1x 35%, and the case of normal birth history was 12%.

The distribution of placenta cases in 2017 with a history of 1 cesarean section was 34 cases, with a history of more than 1 cesarean section as many as 24 cases, and with a normal birth history of 6 cases.

In 2018, there were 49 cases with a history of 1 cesarean section, 20 cases with a history of more than 1 cesarean section, and 5 cases without information. In 2019, there were 56 cases with a history of 1 cesarean section, 34 cases with a history of more than 1 cesarean section, and 8 cases with a normal birth history. In 2020, there were 67 cases with a history of 1 cesarean section, 56 cases with a history of more than 1 cesarean section, and 15 cases without information. In 2021, there were 17 cases with a history of 1 cesarean section, 13 cases with a history of more than 1 cesarean section, and 17 cases with a normal birth history.



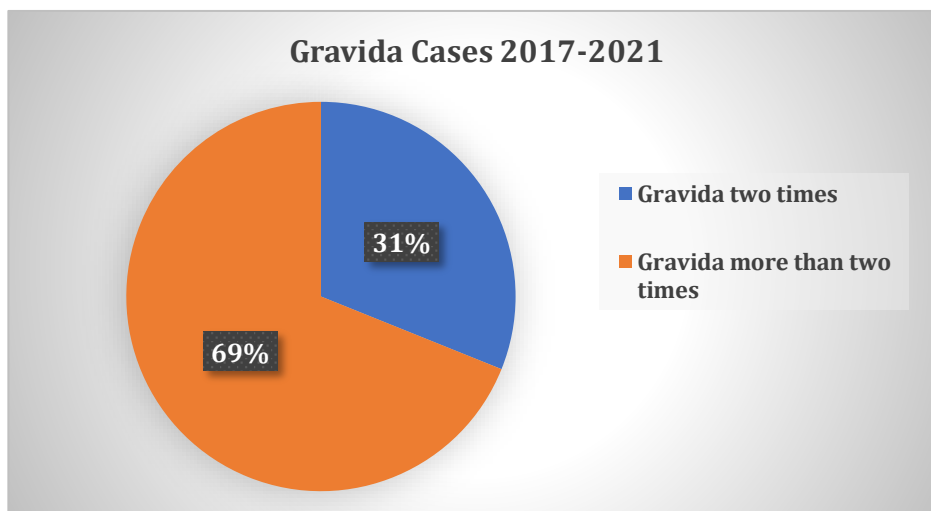
**FIGURE 4:** Distribution of placental cases based on curettage history.

The curettage history group was divided into never curettage, 1 curettage, and more than 1 time.

In 5 years, 70% of patients who have never had a curettage, 22% who have done 1x curettage, and 8% who have done more than 1x curettage.

The distribution of cases in 2017 with those who have never done curatage is 46 cases, those who have done curatage 1 time are 13 cases, and those who have done curatase more than 1 time are 7 cases. In 2018, 49 cases had never done curettage, 22 cases had curettage done 1 time, and 7 cases had done curettage more than 1 time.

In 2019, there were 66 cases of those who had never done curettage, 24 cases of curettage 1 time, and 9 cases of curettage more than 1 time. In 2020, 97 cases had never done curettage, 30 cases of curettage 1 time, and 5 cases cases of curettage more than 1 time. In 2021, there were 44 cases of those who had never done curettage, 6 cases of curettage 1 time, and 6 cases of curettage more than 1 time.



**FIGURE 5:** Distribution of placental cases based on gravida.

The gravida group is divided into gravida 2 times and gravida more than 2 times.



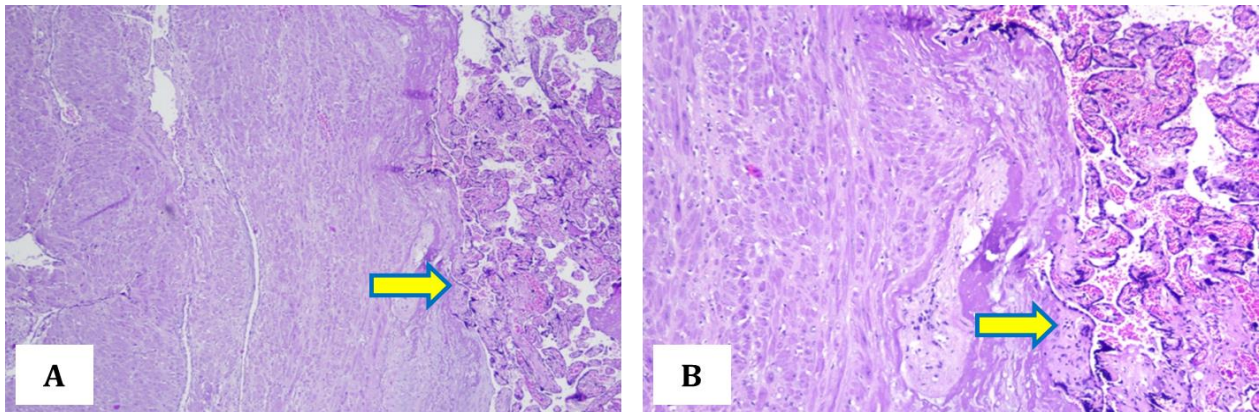
Within 5 years patients the distribution of placental cases was based on gravida. The gravida group is divided into gravida 2 times and gravida more than 2 times. For gravida above 2 times as many as 69% of cases and gravida 2 times as many as 31% of cases.

In 2017, there were 22 cases of patients with gravida 2 times and 48 cases of patients with gravida more than 2 times. In 2018, there were 29 cases of patients with gravida 2 times and 48 cases of patients with gravida more than 2 times.

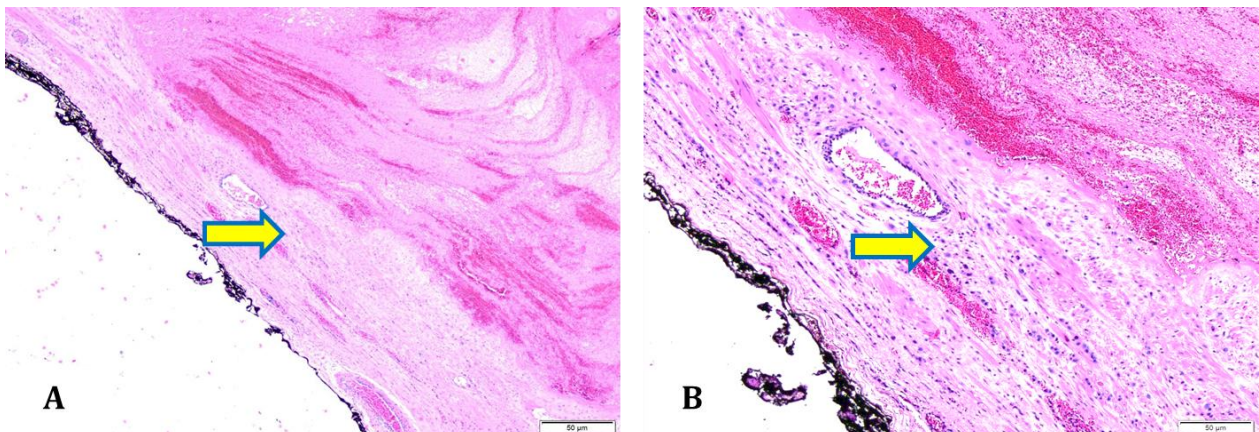
In 2019, there were 28 cases of patients with gravida 2 times and 71 cases of patients with gravida more than 2 times. In 2020, there were 41 cases of patients with gravida 2 times and 97 cases of patients with gravida more than 2 times. In 2021, there were 14 cases of patients with gravida 2 times and 33 cases of patients with gravida more than 2 times.

**Histopathology Overview**

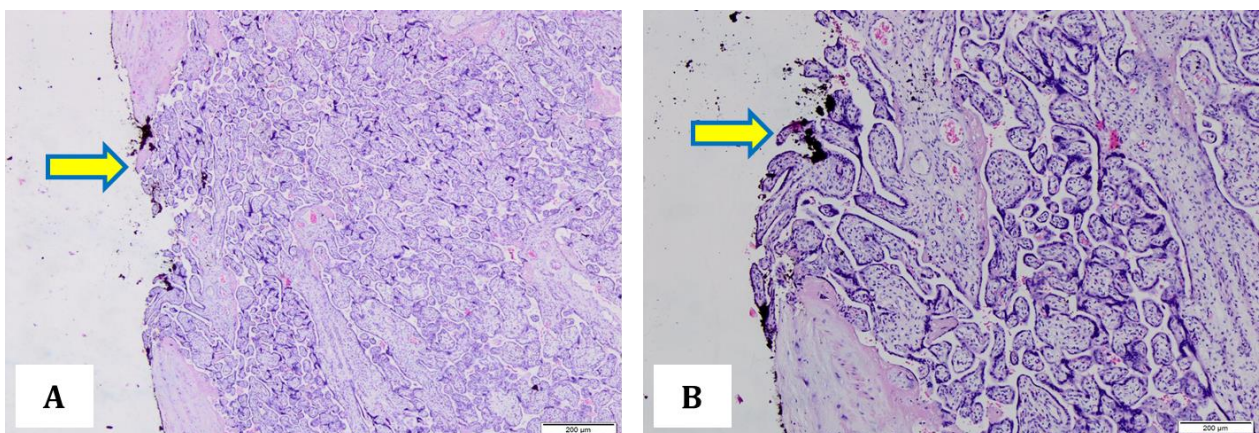
The following are some histopathological descriptions of spectral placenta accreta cases found at the Laboratory of Anatomic Pathology of Dr. Soetomo Hospital Surabaya during the 2017-2021 period:



**FIGURE 6.1:** Histopathological description of placenta accreta, chorionic villi directly implanted into the myometrium (staining HE, enlargement A. 40x, B. 100x).



**FIGURE 6.2:** Histopathological description of placenta increta, chorionic villi invading the myometrium (staining HE, enlargement A. 40x, B. 100x).



**FIGURE 6.3:** Histopathological picture of placenta percreta, chorionic villi invade through the myometrium and may involve surrounding structures (HE staining, enlargement A. 40x, B. 100x).



## DISCUSSION

Placenta accreta spectrum is the cause of severe bleeding and is difficult to control during surgery at Dr. Soetomo the incidence rate increased with a total of 417 cases until 2020 [2].

In developed countries, the increase in caesarean section is associated with an increased incidence of placenta accreta. The incidence of placenta accreta has increased and seems to be directly proportional to the increase in caesarean births. In developing countries, placenta accreta risk factors are multigravida and high parity, and because many women give birth at the end of reproductive and gestational age [7,15].

Placenta accreta is considered a life-threatening condition and is the cause of maternal death. Placenta accreta causes 7%-10% of maternal deaths in the world.

Placenta adherent is an abnormal process of implantation of the placenta into the uterine wall. This abnormal implantation process is divided into 3 namely placenta accreta, increta, and percreta. Placenta accreta is the implantation of placental tissue which is characterized by the infiltration of the placental villi into the myometrium due to the absence of the basal desicles and the nitabuch layer, abnormal remodeling of the mother's blood vessels, and excessive invasion of trophoblasts. Placenta increta is an invasion of the placental villi into the myometrium, while placenta percreta is an invasion of the placental villi deeper than the myometrium to the serous layer and can even reach other intraabdominal organs, such as the bladder [4,7,11].

Currently about 75% of the placebo adherent is placenta accreta, 18% is placenta increta, and 7% is placenta percreta. The depth of placental invasion is clinically important because the management that will be provided depends on it.

The depth of placental invasion is clinically important because the intervention to be carried out depends on it. Placenta accreta can be further divided into total placenta accreta, partial placenta accreta, and focal placenta accreta based on the amount of placental tissue involved in the invasion of the myometrium [15].

Placenta accreta is becoming an increasingly common complication of pregnancy due to the increasing rate of cesarean sections over the past 50 years. Indications for cesarean section continue to evolve, including permits for cesarean section based on the mother's request. Thus the incidence rate of placenta accreta will continue to increase. An increase in the number of previous cesarean sections increases the risk of placenta accreta. The pathogenesis of placenta accreta is unknown. The hypothesis currently in use includes the subversion of decidua, excessive trophoblastic invasion, or a combination of both [6,10,12].

The increase in the prevalence of the placental accreta spectrum is associated with the number of cesarean deliveries and is supported by existing epidemiological data [6,8]. The disorder is caused by abnormalities in the formation of decidua in the area of the hysterotomy scar, this can also occur in myometric trauma such as in curettage [10].

The exact pathogenesis of the placenta accreta spectrum is unknown. The progression of decidua in placenta accreta is usually associated with previous instrumentation such as a history of previous caesarean section or uterine curettage. The hypothesis includes the development of excessive trophoblastic invasion designs, as well as a combination of both. Abnormal expression of growth, angiogenesis, and associated factors in the trophoblast population are the main factors responsible for the occurrence of placental accreta [6].

Some concepts are proposed in part pathophysiology of the placenta accretion spectrum. The old concept is based on the theory that the primary defect of the trophoblast causes excessive invasion until it reaches the myometrium. The latest hypothesis used states that the existence of a secondary defect in the endometrium-myometrium relationship causes the failure of decidualization in the injured uterine area, resulting in infiltration abnormalities of the villi and placental trophoblasts [1,8,9].

## CONCLUSION

This retrospective study was carried out at Dr. Soetomo for the 2017-2019 period and showed 431 cases of placenta accreta spectrum with 296 cases (69%) of placenta increta cases, placenta accreta with 110 cases (26%) and placenta percreta with 25 cases (6%).

The distribution of placenta cases based on the results of histopathological examinations for 5 years was obtained the most were increta 69%, then with placenta accreta 26%, and percreta 6%. The total number of examinations based on the history of cesarean section in placenta cases at Dr. Soetomo Surabaya Hospital during the period 2017-2021 is divided into a history of 1 cesarean section and more than 1 time. During that period, the history of 1x cesarean section was 53%, the history of caesarean section was more than 1x 35%, and the case of normal birth history was 12%.

In 5 years, 70% of patients who have never had a curettage, 22% who have done 1x curettage, and 8% who have done more than 1x curettage.

Within 5 years patients the distribution of placental cases was based on gravida. The gravida group is divided into gravida 2 times and gravida more than 2 times. For gravida above 2 times as many as 69% of cases and gravida 2 times as many as 31% of cases.

The existence of a study that discusses the placenta can provide prevalence data and knowledge of histopathological patterns so that it can be useful for the determination of therapy and can be the basis for further studies.

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