**Histopathological Examination of 65 Cases of Abruptio Placenta**

**Bashir Elgadi**

**Introduction:**
Abruptio placenta is initiated by bleeding into the decidua basalis. In most cases, the sources of bleeding are small arterial vessels in the basal layer of the decidua that are pathologically altered and prone to rupture; such a disturbance could trigger the events leading to abruptio.\(^1\)\(^2\)

Many factors cause abruptio placenta, but a single causative has not been identified. The diagnosis is based on clinical, ultrasonographic and pathologic findings. Ultrasound diagnosis reveals only 7.7% of abruptio placenta as a retroplacental hematoma.\(^3\)

Pathologic diagnosis is based on gross and microscopic examinations of the placenta which show that part of the placenta has been detached, being brown, shrunken, and more solid than the rest, and having an old clot adherent to it. The finding depends on the time between separation and delivery of the placenta; if separation occurs a few minutes before delivery, the placenta may appear completely normal.\(^4\)

Naeye lists histologic criteria that provide evidence that a retroplacental hematoma has been present before labor: clot lamination, decidual acute inflammatory cell infiltrate, adjacent decidual necrosis and disappearance of the intervillous space with crowding of the villi.\(^5\)

**Aim of study:**
To confirm the clinical diagnosis of 65 cases of abruptio placenta by histopathological examination.

**Methods and Materials:**
Sixty-five cases of abruptio placenta were examined histopathologically by using haematoxylin and eosin staining. The placentas were studied by standard protocols; the data recorded were placental weight, diameters of the placenta and length of the umbilical cord. For each case, two of samples of the umbilical cord, two samples of the extraplacental membranes and four samples of processed tissue were used. The stages in the production of histopathological slides were:\(^6\)

1. The tissue was immersed in a solution of chemicals to preserve the protoplasm, 10% solution of formalin in saline was used as a fixative.
2. Dehydration was carried out by immersing the tissue block in an increasing concentration of ethyl alcohol, placing the tissue in 30%, 50%, 70%, 90% and absolute alcohol. The time in each varies between 1 and 2 hours. The use of graded strengths of alcohol gradually removes the water from the tissue without causing cellular damage and hardening the tissue.
3. The block of the tissue was removed from absolute alcohol and was passed through successive changes of xylene until all the alcohol was replaced with xylene.
4. Once the tissue was impregnated with the clearing agent (xylene), the block of tissue was placed in melted paraffin to support the tissue during the sectioning.
5. The small block of paraffin containing the tissue was then mounted on an instrument that is designed to cut thin tissue slices. The instrument, called a microtome, has a sharp steel knife capable of cutting paraffin section 4 to 6µm thick. The paraffin sections were flattened by floating them on warm water until they are transferred to glass slides coated with adhesive.
6. The purpose of staining was to increase the contrast between the various tissue and cell components. Haematoxylin and eosin staining was used as the method of staining samples of different sites of the placenta.

**Results:**
On macroscopic examination of the placenta, the most frequent manifestation of abruptio placenta was a fresh retroplacental hematoma immediately after delivery, which was considered as the pathological hallmark of premature placental separation. The detached part of the placenta was brown, shrunken and more solid than the rest, with or without clot formation depending on the time of separation. Six out of 70 (8.5%) cases of abruptio placenta had total separation of the placenta; 13 (18.3%) patients had one-half of the surface separation, and 24 (33.8%) patients had one-third of the surface separation.

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Of the 70 patients with a clinical picture of abruptio placenta, pathological examination was performed on only 65 patients after delivery. Sixty-one out of 65 (93.8%) of the placentas examined histopathologically had a confirmed clinical diagnosis of abruptio placenta.

Table 1. Pathological examination of the placenta

<table>
<thead>
<tr>
<th>Pathological examination</th>
<th>Retroplacental hemorrhage (n)</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Microscopic</td>
<td>Present</td>
<td>61</td>
</tr>
<tr>
<td>Microscopic</td>
<td>Absent</td>
<td>4</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>65</td>
</tr>
</tbody>
</table>

Four cases of abruptio placenta were not confirmed by microscopic examination, and the size of separation was less than one-fourth.

The time of placental separation can be recent, old or mixed (recent and old). According to pathological examination, 31 out of 61 (50.8%) cases, the separations were recent, 4 out of 61 (6.6%) old and 26 (42.6%) mixed.

Retroplacental hemorrhage (RPH) was considered as a sign of abruptio placenta, which was recognized under light microscope after staining.

Figure 2. Separation time in abruptio placenta
Old placental separations were associated with a mild degree clinical picture of abruptio placenta which were diagnosed retrospectively, while recent separations gave a more obvious clinical picture of abruptio, mainly fetal distress, and were delivered by cesarean section. Abruptio placenta may occur at the placental margin or more centrally. The site of placental separation can be marginal, central, marginal and central, or total. Marginal placental separations were presented in 25 out of 61 (40%) cases which was associated with a mild clinical feature; central placental separations were found in 16 out of 61 (26.2%), marginal and central were present in 15 out of 61 (24.6%) and total separations in 5 out of 61 (8.2%) cases, which were clinically manifested as a severe degree of abruptio placenta and poor neonatal outcome.

The other findings of microscopic examination were associated with abruptio placenta. Focal hyperemic intervillous space was detected in 34 out of 61 cases (55.7%) while diffused hyperemic was present only in 6 out of 61 cases (9.8%). Twenty-one (34.4%) cases of abruptio placenta were associated with infarction. Inflammatory infiltration was present in 8 out of 61 (13.1%), and calcification in 12 out of 61 (19.6%). Fibrin deposition was found in 34 out of 61 (55.7%). Necrosis was found only in 2 out of 61 (3.2%) of the cases, thrombosis of umbilical vessels in 27 out of 61 (44.2%),

<table>
<thead>
<tr>
<th>Histopathological examination</th>
<th>(n)</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hyperaemia of intervillous space (focal)</td>
<td>34</td>
<td>55.7</td>
</tr>
<tr>
<td>Hyperaemia of intervillous space (diffused)</td>
<td>6</td>
<td>9.8</td>
</tr>
<tr>
<td>Infarction</td>
<td>21</td>
<td>34.4</td>
</tr>
<tr>
<td>Fibrin deposition</td>
<td>34</td>
<td>55.7</td>
</tr>
<tr>
<td>Inflammatory infiltration</td>
<td>8</td>
<td>13.1</td>
</tr>
<tr>
<td>Calcification</td>
<td>12</td>
<td>19.6</td>
</tr>
<tr>
<td>Necrosis</td>
<td>2</td>
<td>3.2</td>
</tr>
<tr>
<td>Thrombosis of umbilical vessels</td>
<td>27</td>
<td>44.2</td>
</tr>
<tr>
<td>Premature separation of membranes</td>
<td>23</td>
<td>37.7</td>
</tr>
<tr>
<td>Chorioamnionitis</td>
<td>8</td>
<td>13.1</td>
</tr>
</tbody>
</table>

Table 2. Histopathological examination of abruptio placenta

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premature separation of the membranes in 23/61 (37.7%), and chorioamnionitis in 8 out of 61 (13.1%).

Discussion and Conclusion:
Retroplacental hematoma is a bleeding from the maternal vessels in the placental bed, resulting in partial or total separation of the placenta.

The clinical presentation is variable, ranging from classical abruptio to silent retroplacental bleeding; the diagnosis is possible only after the examination of the placenta.

In this study, in 61 out of 65 abruptio placenta cases (93.8%), histopathological examination confirmed the clinical and retrospective diagnosis of abruptio placenta.

The four remaining cases, not confirmed by histopathological examination, might be accounted for as follows:
1. The presence of the separation less than ¼ of the total size of the placenta, which may not be included during microscopic examination.
2. One case was diagnosed retrospectively with no history of vaginal bleeding or fetal distress, while the other three cases were associated with a history of vaginal bleeding and fetal distress, which may have occurred in other cases except abruptio placenta.

References: