**Borderline ovarian tumours**

Ovacome is a national charity providing advice and support to women with ovarian cancer. We give information about symptoms, diagnosis, treatment, research and screening. Ovacome also runs a telephone support line and works to raise awareness and give a voice to all those affected by ovarian cancer.

This fact sheet is for women diagnosed with a borderline ovarian tumour, a form of cancer sometimes called a tumour of low malignant potential or borderline ovarian cancer (BOC). It describes the best care for the small group of women who have more difficult cases of BOC.

If you are diagnosed with a borderline ovarian cancer you can feel confused and uncertain. However, most women who develop BOC are completely cured by surgery and never need any more treatment.

What is borderline ovarian cancer?

Ovarian cancer develops when cells grow uncontrollably on the surface of the ovary and are able to spread to other organs.

Borderline tumours arise from the same type of cells, but their growth is much more controlled, and they are usually not able to spread.

Most cases of ordinary ovarian cancer are found at an advanced stage (stage 3 or 4). This is when the cancer has spread beyond the ovary. Because BOC behaves in a much less aggressive way, in most women the condition has not spread beyond the ovary when it is diagnosed (stage 1 disease).

This means that for women who have had surgery to remove early disease, the risk of it coming back is very small at less than 5 per cent. Most experts recommend that no special follow-up is needed after surgery for stage 1 BOC.

**More difficult cases**

There are three situations which can cause greater concern or uncertainty.

1. Borderline ovarian tumours which have spread beyond the ovary.

2. Mucinous borderline tumours involving the ovary, when tests suggest these could originate from a tumour in the appendix.

3. Stage 1 borderline ovarian tumours in young women treated with limited surgery to keep an ovary. There could be an increased risk of the disease coming back in the ovary you have kept.
**Borderline ovarian tumours which have spread beyond the ovary**

A small number of women with BOC have disease which has spread, in the form of little seedlings, onto the peritoneal membrane covering other organs in the abdomen.

**Surface seedlings**

Most of these seedlings do not invade the underlying tissue, but are just sitting on the surface. They are sometimes referred to as “non-invasive implants”. It is rare for them to cause problems, even if they stay after surgery.

We do not know the absolute correct way to care for women with surface seedlings/non-invasive implants of BOC, because research studies comparing different treatments (including observation) have not been performed.

Most women with BOC who have surface seedlings/non-invasive implants to the peritoneum (stage 2 or 3) have no other problems, and no treatment (such as chemotherapy or radiotherapy) is known to reduce the risk of problems.

At present, the best care involves regular follow-ups to check that these remaining seedlings have not grown.

**Invasive implants**

In a very small number of women the surface seedlings of BOC show a tendency to invade the tissues. This behaviour is more like conventional ovarian cancer, suggesting more chance of a tumour growing in the future.

For women with seedlings that have demonstrated an ability to invade the tissues the outlook is still generally much better than for women diagnosed with the equivalent stage of ordinary ovarian cancer, as the tumour still does not necessarily behave as cancer does.

There is a question about treating women with invasive seedlings of BOC with chemotherapy immediately, or waiting until there is definite evidence of the condition getting worse. Close observation and repeated scans often show that the condition hardly changes over time. This means that you may not need chemotherapy in the long term.

It is important to be aware of the limits of chemotherapy in treating stage 3 BOC with invasive seedlings. The chance of there being a benefit is quite low, and the disease cannot be completely removed. This means it is reasonable to be cautious with chemotherapy and put off using it until it is needed.

Repeated surgery can be valuable in certain cases. Samples of tumours taken during an operation may show a change in how the tumour is behaving.

If pathology results show that the tumour has features like conventional ovarian cancer, then standard treatment for ordinary ovarian cancer can be recommended.

**Mucinous borderline ovarian tumours**

Most borderline ovarian tumours are classified as ‘serous’ from their appearance under the microscope.
A smaller number have a different appearance and are called ‘mucinous’. Sometimes a small, undetected mucinous tumour can develop in the appendix, and spread to the ovary. This can give the appearance of a primary ovarian tumour, when in fact it is a secondary tumour.

It is important to consider this possibility in all cases of mucinous borderline ovarian cancer, so that a separate appendix tumour is not left behind at surgery.

It is difficult to decide the type of ovarian tumour (serous or mucinous) at the time of the operation. So surgeons must carefully inspect the whole abdomen, including the appendix, to look for a hidden primary tumour.

After surgery the pathologist may use special tests to tell apart a mucinous borderline tumour which has arisen from the appendix from one which was originally from the ovary.

Multidisciplinary teams dealing with ovarian tumours should always discuss these cases in detail, so they can make sure you receive the correct advice and treatment.

Stage 1 borderline ovarian tumours in young women treated with limited surgery
If you are a young woman with a borderline ovarian tumour, you may want to keep an ovary so you can have children. In this situation, a surgeon may remove the affected ovary, but leave the apparently normal ovary and uterus (womb). The surgeon must examine the abdomen carefully, to check if any cancer has spread.

In about 20 per cent of these cases, the tumour comes back in the ovary that is left.

This means you need regular check-ups after surgery. Follow-ups include ultrasound examinations every six months for about two years, then yearly. Later it may be appropriate for women who have had their family to have the remaining ovary removed. This removes the risk of problems in the future, and means they will not have to go for follow-ups.

Research into BOC
A study based in hospitals in the south of England is collecting tissue samples and clinical data to look at how BOC tumours are controlled by molecules in affected cells. The aim is to shape treatments to suit individual women and be better able to predict disease outcomes. If you want to take part ask your oncologist to contact the chief investigator Dr Mona El-Bahrawy at Imperial College Healthcare NHS Trust. Taking part in the study should not affect your treatment plan but may mean you are offered a longer follow-up period.

If you would like more information on the sources and references for this fact sheet, please call us on 0800 008 7054.
If you would like to discuss anything about ovarian cancer, phone our support line on Freephone 0800 008 7054 Monday to Friday between 10am and 5pm. You can also visit our website at www.ovacome.org.uk.

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Disclaimer:
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### Glossary for Fact sheet 10

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<thead>
<tr>
<th>Term</th>
<th>Definition</th>
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<tbody>
<tr>
<td>Biopsy</td>
<td>Removal of a small piece of tissue from an organ or part of the body so it can be examined under a microscope.</td>
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<td>Chemotherapy</td>
<td>Treating a disease with medication, such as cytotoxic drugs (drugs that kill cancer cells).</td>
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<td>Malignant</td>
<td>Malignant tumours have the ability to invade and destroy surrounding tissues and can spread to other organs.</td>
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<tr>
<td>Mucinous tumours</td>
<td>Mucinous borderline ovarian tumours are a less common type of borderline ovarian tumour. They look different under the microscope, showing glandular structures.</td>
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<td>Multidisciplinary Team</td>
<td>Several members of different hospital departments who meet to discuss the treatment plan for individual patients.</td>
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<td>Pathology</td>
<td>The branch of medicine that examines tissue from patients to determine diagnosis and treatment options.</td>
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<td>Peritoneal membrane</td>
<td>Membrane that lines the abdomen and covers other internal organs.</td>
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<td>Primary tumour</td>
<td>The first cancerous tumour to develop in a particular part of the body.</td>
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<td>Radiotherapy</td>
<td>Treating a disease with radiation.</td>
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<td><strong>Secondary tumour</strong></td>
<td>A tumour that involves a different place from where the cancer originally started (also called metastasis).</td>
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<tr>
<td><strong>Serous tumours</strong></td>
<td>Serous borderline ovarian tumours are the most common type of borderline ovarian tumour. They come from the surface membrane of the ovary and have a particular appearance under the microscope.</td>
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<tr>
<td><strong>Ultrasound scan</strong></td>
<td>Using sound waves to build up a picture of organs inside the body, through a probe placed on the abdomen or in the vagina.</td>
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<td><strong>Omentum</strong></td>
<td>A layer of fatty tissue in the upper abdomen commonly involved in secondary ovarian cancer at the time of diagnosis.</td>
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<td><strong>Stage</strong></td>
<td>The extent of cancer spread, which can range from stage I, when disease is confined to the original organ, to stage IV, when there are secondary tumours involving other areas of the body. In ovarian cancer, stage III disease is commonly seen at diagnosis. This indicates that there has been secondary spread within the abdomen, involving the peritoneal membrane and / or omentum.</td>
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