Hypothesis / aims of study
In the previous study, we reported a significant improvement in sexual function outcome following the surgery with tension-free vaginal mesh (TVM) for pelvic organ prolapse (POP). We evaluated the effect of TVM procedure on clitoral blood flow and sexual function in women with POP.

Study design, materials and methods
A total of 39 underwent TVM for surgical correction of POP. Seventeen of 39 patients underwent tranlabial color Doppler ultrasonography. The Doppler translabial probe was placed sagittally on the clitoris at an angle of less than 20°, without exerting any significant pressure on the tissues. After identifying the clitoral artery using color flow mapping, the Doppler probe was positioned over the vessel and at least three sequential Doppler waveforms were obtained. We measured the resistance index (RI), pulsatility index (PI), peak systolic velocity (PSV), and end-diastolic velocity (EDV) of the clitoral arteries, before and 1, 3, 12 months postoperatively. Female sexual function was also investigated with the Female Sexual Function Index (FSFI) which was a 19-question, self-report measure, organized in a 6-domain structure, including desire, subjective arousal, lubrication, orgasm, satisfaction, and pain.

Results
One month after surgery, the mean PI was significantly greater and the mean PSV of the clitoral arteries was significantly lower compared with baseline. (P<0.05). However, the mean PI and mean PSV recovered at 12 months postoperatively. Total FSFI scores was deteriorated from 10.2±7.9 at baseline to 7.0±4.3 at 3 months. However, FSFI scores improved significantly from 10.2±7.9 at baseline to 18.2±8.1 at 6 months, 21.4±7.3 at 12 months after surgery. As the pulsatility index values decreased, FSFI scores tended to increase; and FSFI scores also tended to increase as flow velocity increased.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Baseline</th>
<th>1 M after TVM</th>
<th>3 M after TVM</th>
<th>12 M after TVM</th>
</tr>
</thead>
<tbody>
<tr>
<td>RI</td>
<td>0.77±0.11</td>
<td>± 0.86±0.12</td>
<td>± 0.71±0.06</td>
<td>± 0.75±0.08</td>
</tr>
<tr>
<td>PI</td>
<td>1.37±0.34</td>
<td>± 1.55±0.34</td>
<td>± 1.33±0.06</td>
<td>± 1.26±0.30</td>
</tr>
<tr>
<td>PSV (cm/sec.)</td>
<td>12.38±8.85</td>
<td>± 8.03±10.59</td>
<td>± 8.50±3.10</td>
<td>± 8.93±2.55</td>
</tr>
<tr>
<td>EDV (cm/sec.)</td>
<td>2.89±1.48</td>
<td>± 2.30±0.76</td>
<td>± 2.59±0.76</td>
<td>± 3.27±0.76</td>
</tr>
<tr>
<td>FSFI</td>
<td>10.2±7.9</td>
<td>± (-)</td>
<td>± 18.2±8.1**</td>
<td>± 21.4±7.3*</td>
</tr>
</tbody>
</table>

** 6M after TVM * P<0.05

Interpretation of results
This is the first study evaluating the clitorial blood flow using color Doppler ultrasonography in patients with POP. Our study demonstrates that surgical correction of POP using TVM may result in decreased clitorial blood flow temporally. As clitorial blood flow return to baseline, improvement in sexual function is noted.

Concluding message
Color Doppler ultrasonography appears to be feasible and useful in measuring both baseline and post-treatment condition of clitorial blood flow in patients treated with TVM for POP. Further studies are necessary to investigate the effect of clitorial blood flow changes on female sexual function in various clinical settings.

Specify source of funding or grant
None

Is this a clinical trial?
No

What were the subjects in the study?
HUMAN

Was this study approved by an ethics committee?
Yes

Specify Name of Ethics Committee
Ethics Committee of Okayama University

Was the Declaration of Helsinki followed?
Yes

Was informed consent obtained from the patients?
Yes