Purpose

• The objective was to assess the impact of Revolve and centrifugation on OR time and costs through developing a budget impact model (BIM).

Methods

Perspective and Data Inputs

• The BIM was developed from a hospital administrator's perspective.
• Data from the literature including two conference posters4-5 and a survey of surgeons (n=30) were used in the BIM.
• Data inputs and references are summarized in Table 1.

Background

• To our knowledge, there are no studies examining the impact of Revolve on OR time or costs despite OR use contributing significantly to the total cost of patient care.

• Data from the literature including two conference posters4-5 and a survey of surgeons (n=30) were used in the BIM.

Table 1. Summary of Data Inputs and References

<table>
<thead>
<tr>
<th>Variable</th>
<th>Description</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rate of AFG</td>
<td>Calculated by averaging the lowest and highest volumes and times reported in two posters4-5 for Revolve (n=131), respectively (Figures 1A-C). As shown in Figures 1A and 1B, Revolve was associated with substantially greater volume of fat grafted and faster grafting time than centrifugation.</td>
<td>Number of AFG procedures/minute</td>
</tr>
<tr>
<td>Cost of OR</td>
<td>Included staff wages and facility costs. Both Canadian and US costs were averaged after converting Canadian dollars to USD and adjusting for inflation to 2014.</td>
<td>US dollars (USD)</td>
</tr>
<tr>
<td>Mean time of completing AFG</td>
<td>A surgeon survey (n=30) reported in two posters4-5 for Revolve (n=127) and centrifugation (n=131), respectively.</td>
<td>Minutes</td>
</tr>
<tr>
<td>Mean volume of fat grafted</td>
<td>A surgeon survey (n=30) reported in two posters4-5 for Revolve (n=127) and centrifugation (n=131), respectively.</td>
<td>Milliliter (mL)</td>
</tr>
</tbody>
</table>

Results

• Mean cost of OR use per AFG procedure was substantially less with Revolve than centrifugation: $3,135 versus $3,424 (range: $1,233-$1,436 versus $3,072-$3,710, respectively) (Figure 3).

• The difference in annualized cost of OR use was as high as $207,476 between Revolve and centrifugation, signifying a substantial cost savings when converting from centrifugation to Revolve (Figure 4).

• Based on linear projection, cost savings as high as $622,429 are expected for the BIM and the cost of AFG procedures in 2014. (Figure 4).

• These results, however, should be interpreted as savings in opportunity cost of surgical staff more than as absolute cost savings for individual hospitals.

• The current BIM applied conversions from rate of AFG to procedure time to OR costs. Variations in patient subgroups or geographic location of hospitals were not considered.

• Learning curve or comfort level of utilizing aforementioned AFG techniques was not considered in the BIM.

• Data inputs from the two conference posters4-5 were specific to women undergoing breast reconstruction. Rate of AFG from additional types of reconstructive or aesthetic surgeries such as face, neck, hands or buttocks is required to further test the impact of Revolve versus centrifugation on OR time and cost.

Conclusions

• As popularity of AFG increases, evaluating the economic impact of AFG systems becomes essential. Based on current findings, the Revolve system results in substantial OR time and cost savings compared to centrifugation, as much as $207,476 per 100 AFG procedures.

References