INTRODUCTION

- This project focuses on the fluid management in large ventral hernia patients.
- Inability to properly manage fluid during surgery can lead to prolonged hospital stays, poor wound healing, ventilatory support, and intensive care unit admission.
- Normalized hemodynamic status has been shown to improve outcomes and decrease complications.
- Patients were receiving fluid management based on the clear sight monitor.
- During surgery, the monitor measures the patient’s stroke volume (SV), cardiac index (CI), mean arterial pressure (MAP), and systemic vascular resistance (SVR).
- Utilizing stroke volume (SV) is one way to maintain normal hemodynamic status during the operative period.
- Patients were receiving fluid if the stroke volume increased or decreased by 10% of its normal range.
- Multiple studies have been performed but never confirmed the outcomes of goal directed fluid therapy management.

METHODS

- Retrospective review of patients underwent large ventral hernia repairs from 2015 to 2018 at Christiana Care Hospital.
- Patients were stratified to two groups: those who had goal directed fluid therapy (Pathway) and those who did not have goal directed fluid therapy (Baseline).
- Objective:
  - Compare the difference in length of stay (LOS) between Pathway group and Baseline group.

RESULTS

<table>
<thead>
<tr>
<th>Clinical Characteristics</th>
<th>In Range %</th>
<th>Patients (N)</th>
<th>Average LOS</th>
</tr>
</thead>
<tbody>
<tr>
<td>SV IntraOp in Range within (65-100)</td>
<td>50%</td>
<td>130</td>
<td>6.98</td>
</tr>
<tr>
<td>SV IntraOp in Range within (65-100)</td>
<td>60%</td>
<td>122</td>
<td>7.05</td>
</tr>
<tr>
<td>SV IntraOp in Range within (65-100)</td>
<td>70%</td>
<td>112</td>
<td>7.24</td>
</tr>
<tr>
<td>SV IntraOp in Range within (65-100)</td>
<td>80%</td>
<td>98</td>
<td>7.35</td>
</tr>
<tr>
<td>MAP PostOp in Range within (≥ or = 65)</td>
<td>50%</td>
<td>136</td>
<td>7.72</td>
</tr>
<tr>
<td>MAP PostOp in Range within (≥ or = 65)</td>
<td>60%</td>
<td>127</td>
<td>7.46</td>
</tr>
<tr>
<td>MAP PostOp in Range within (≥ or = 65)</td>
<td>70%</td>
<td>110</td>
<td>7.56</td>
</tr>
<tr>
<td>MAP PostOp in Range within (≥ or = 65)</td>
<td>80%</td>
<td>84</td>
<td>7.46</td>
</tr>
<tr>
<td>CI IntraOp in Range within (2.0-4.0)</td>
<td>50%</td>
<td>131</td>
<td>6.7</td>
</tr>
<tr>
<td>CI IntraOp in Range within (2.0-4.0)</td>
<td>60%</td>
<td>125</td>
<td>6.7</td>
</tr>
<tr>
<td>CI IntraOp in Range within (2.0-4.0)</td>
<td>70%</td>
<td>117</td>
<td>6.78</td>
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<tr>
<td>CI IntraOp in Range within (2.0-4.0)</td>
<td>80%</td>
<td>110</td>
<td>6.68</td>
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<tr>
<td>SVR PostOp in Range within (800-1200)</td>
<td>50%</td>
<td>60</td>
<td>7.38</td>
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<tr>
<td>SVR PostOp in Range within (800-1200)</td>
<td>60%</td>
<td>40</td>
<td>7.82</td>
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<tr>
<td>SVR PostOp in Range within (800-1200)</td>
<td>70%</td>
<td>28</td>
<td>7</td>
</tr>
<tr>
<td>SVR PostOp in Range within (800-1200)</td>
<td>80%</td>
<td>21</td>
<td>6.9</td>
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<table>
<thead>
<tr>
<th>Clinical Characteristics</th>
<th>Patients (N)</th>
<th>Average LOS</th>
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<tbody>
<tr>
<td>Baseline</td>
<td>182</td>
<td>8.96</td>
</tr>
<tr>
<td>Pathway</td>
<td>217</td>
<td>6.58</td>
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<tr>
<td>SV IntraOp in Range measured</td>
<td>166</td>
<td>6.95</td>
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<tr>
<td>MAP PostOp in Range measured</td>
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<td>7.73</td>
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<tr>
<td>CI IntraOp in Range measured</td>
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<td>6.82</td>
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<tr>
<td>SVR PostOp in Range measured</td>
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<td>7.25</td>
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<table>
<thead>
<tr>
<th>Risk factors with an effect on LOS</th>
<th>Patients (N)</th>
<th>Average LOS</th>
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<tbody>
<tr>
<td>(CHF)</td>
<td>5</td>
<td>15.8</td>
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<tr>
<td>Diabetes</td>
<td>32</td>
<td>11.6</td>
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<tr>
<td>Renal Failure</td>
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<td>0</td>
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<tr>
<td>Hypertension (HTN)</td>
<td>33</td>
<td>10.06</td>
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<tr>
<td>Obesity</td>
<td>29</td>
<td>9.51</td>
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<tr>
<td>Smoker</td>
<td>34</td>
<td>11.88</td>
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<tr>
<td>(COPD)</td>
<td>18</td>
<td>10.33</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Risk factors with an effect on LOS</th>
<th>Patients (N)</th>
<th>Average LOS</th>
</tr>
</thead>
<tbody>
<tr>
<td>(CHF)</td>
<td>5</td>
<td>8.8</td>
</tr>
<tr>
<td>Diabetes</td>
<td>42</td>
<td>9</td>
</tr>
<tr>
<td>Renal Failure</td>
<td>5</td>
<td>6.4</td>
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<tr>
<td>Hypertension (HTN)</td>
<td>87</td>
<td>7.79</td>
</tr>
<tr>
<td>Obesity</td>
<td>47</td>
<td>7.36</td>
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<tr>
<td>Smoker</td>
<td>56</td>
<td>8.1</td>
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<tr>
<td>(COPD)</td>
<td>14</td>
<td>8.07</td>
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</tbody>
</table>

CONCLUSIONS

- Patients who did not receive goal directed fluid therapy had an average length of stay of 8.86 days
- The average length of stay reduced by 2.28 days for patients who received goal directed fluid therapy (P<0.001)
- Patients on pathway and with 2 and 3 ASA scores had lower average length of stay than baseline patients with ASA scores of 2 and 3.
- Maintaining the SV and CI in range within 50% of the total time spent in procedure had the greatest impact on reducing the average length of stay at the hospital.

CLINICAL IMPLICATIONS

Applying Goal directed fluid therapy helps to heal patients faster and reduces the length of stay at the hospital.

ACKNOWLEDGEMENTS

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