ASCs and Hospitals Yield Similar Outcomes for Treatment of Supracondylar Humerus Fractures

Study finds care in ASCs is faster, more cost-effective

TERRY STANTON

A study of pediatric patients treated surgically for supracondylar humerus (SCH) fractures found that those who were treated in an ambulatory surgical center (ASC) received care that was as safe, faster, and more cost-effective than those treated in a children’s hospital.

The study, presented at the AAOS 2018 Annual Meeting by Carson Mills Rider, MD, identified 316 patients who underwent closed reduction and percutaneous pinning (CRPP) of Gartland extension type II SCH fractures. Of these, 231 (73 percent) were treated after being admitted to a full-service hospital (HOSP), 35 in a hospital outpatient department (HOPD), and 50 in an ASC. Radiographic outcomes (humeral line index and Baumann angle) did not differ significantly between the groups at any time point, “except preoperatively when the humeral line index for the HOSP patients was higher (P = 0.02), indicating slightly greater displacement than the other groups,” Dr. Rider explained. Overall complication rates were not significantly different among the groups, nor were occurrences of individual complications. The mean surgical time was significantly shorter in ASC patients than in HOPD and HOSP patients, and total charges were significantly lower as well (Table 1).

“The data from this study reflects excellent radiographic outcomes and low complication rates regardless of treatment location, which is no surprise. The differences in treatment times and charges were the results that caught my attention,” Dr. Rider said. “Our ASCs showed 66 percent shorter treatment time than HOPDs. Charges for this procedure in the ASC were 73 percent lower than in the HOSP and 63 percent lower than in the HOPD. The surgeon professional fees were the same at all locations, so charge differences are based solely on facility costs. Since we treat a large number of these fractures each year, these differences in cost and time can quickly accumulate.”

According to the study authors, “There has been a dramatic shift in the past decade toward outpatient surgery for many orthopaedic conditions including pediatric fractures.” They noted that several studies have shown that SCH fractures, especially those that are less severe, can be treated safely in a delayed fashion, while no studies to date have evaluated the results of SCH fractures treated in the outpatient setting, either in the HOPD or ASC. Their results, they wrote, “show that clinical outcomes are equal in terms of safety with extremely low complication rates regardless of location used and highlight the fact that treatment of minimally displaced SCH fractures in the outpatient setting, especially in a freestanding ASC, is faster in terms of surgical and total facility time as well as less expensive in terms of charges. Due to the fact that freestanding ASCs are paid on average 60 percent of HOPD for similar procedures, further cost savings to payers and the healthcare system occur with the use of ASCs.”

Dr. Rider noted that the findings apply to Gartland type II fractures, “which have an inherently low rate of complications,” and thus “there are patients, based on the severity of their injuries, comorbidities, and other factors who may be more safely treated in the HOSP setting.” The authors wrote that further studies evaluating other fracture types, as well as patient/family-specific factors such as satisfaction scores, are underway and will add further guidance as to optimal treatment of pediatric fractures in the ASC setting.

Addressing limitations of the study, Dr. Rider said, “because of the retrospective nature of this study, we had to use charge data rather than true cost, which may not reflect the exact amount paid by patients and third-party payers. Also, we were not able to calculate the indirect costs to families associated with increased facility time in the HOSP and HOPD groups. This must be considered because treatment in the HOPD or ASC does require a second trip to a facility for the CRPP to be performed, and this may not be cost and/or time-effective if, for example, a patient lives several hours away from the treatment facility. Further prospective study is necessary to better understand these factors.”

Another limitation is the lack of randomization of the patients to each group. ASC patients were slightly older (5.4 years) than those treated at HOPDs (4.2 years). “However, this age difference was clinically irrelevant in terms of treatment and outcome,” Dr. Rider said. “We also found that the fractures in the HOSP group had a slightly lower preoperative hip labral injury (more displaced), which again is likely not clinically relevant since these were all type II fractures.”

The authors concluded, “Our study has shown that Gartland extension type II SCH fractures can be safely treated in a freestanding ambulatory surgical center with excellent clinical and radiographic outcomes that are equal to those obtained in the HOSP and HOPD. In addition, treatment of these injuries in a freestanding ASC is also faster, and more cost-effective for patients, third-party payers, and healthcare systems.”

According to Carson Rider, MD, “Patients with Gartland extension type II supracondylar humerus fractures can be safely treated in a freestanding ambulatory surgical center with excellent clinical and radiographic outcomes:”

Terry Stanton is the senior science writer for AAOS Now. He can be reached at tstanton@aaos.org.

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**TABLE 1: MEAN SURGICAL TIMES AND TOTAL CHARGES AMONG THE FACILITIES**

<table>
<thead>
<tr>
<th>Factors</th>
<th>HOSP</th>
<th>HOPD</th>
<th>ASC</th>
<th>3-group analysis</th>
<th>Subgroup analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surgery time (min.)</td>
<td>30</td>
<td>29</td>
<td>20</td>
<td>&lt; 0.0001</td>
<td>P &lt; 0.0001</td>
</tr>
<tr>
<td>Total facility time (hours)</td>
<td>27</td>
<td>12</td>
<td>4.6</td>
<td>&lt; 0.0001</td>
<td>P &lt; 0.0001</td>
</tr>
<tr>
<td>Total facility time without ED time (hours)</td>
<td>24</td>
<td>10</td>
<td>3.4</td>
<td>P = 0.0001</td>
<td>P = 0.0001</td>
</tr>
<tr>
<td>Charge (U.S. dollars)</td>
<td>$17,706.15</td>
<td>$13,148.33</td>
<td>$4,843.76</td>
<td>P = 0.0001</td>
<td>P = 0.0001</td>
</tr>
</tbody>
</table>

ASC: ambulatory surgery center; HOPD: hospital outpatient department; HOSP: hospital inpatient; ED: emergency department

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