Manipulation of the Sacroiliac Joint under General Anesthesia versus Other Conservative Treatment for the Management of Post Labor Backache due to Sacroiliac Subluxation

Haider Wehab Ali1, Mohamed Bahjat A. Rabea2 and Ali H. Khudhair2
1. Department of Surgery, Al-Samawa General Hospital, Iraq
2. Department of Surgery, Basrah Medical College, Iraq

Abstract: A prospective comparative study conducted on 12 patients with post labor backache (after 3 days of vaginal delivery till the end of puerperium) in Al-Basrah General Hospital, during the period from July 2009 till October 2010. The aim of this study is to compare between the results of manipulation of sacroiliac joint under general anesthesia and other conservative treatment for the management of post labor backache due to sacroiliac subluxation. The 12 patients included were those who met the diagnostic criteria for sacroiliac subluxation [pain in the sacral region, a positive Piedallu’s sign (asymmetrical movement of the posterior superior iliac spine upon forward flexion), a positive pelvic compression test, and asymmetry of the anterior superior iliac spine] plus confirmatory signs of sacroiliac subluxation (straight leg raise, flexion block, positive Patrick’s test, pain at Baer’s point). The patients were divided into two groups A and B, 6 patients in each, those in group A were treated by NSAID, special pelvic belt and physiotherapy while those in group B were treated by manipulation of the sacroiliac joint under general anesthesia. In group A, pain was relieved partially in 4 patients (66.7%) and in 2 patients (33.3%) there was no improvement after 12 weeks of treatment. While in group B, pain was relieved totally in 5 patients (83.4%) and partial pain relieve in one (16.6%). In conclusion, manipulation of the sacroiliac joint under general anesthesia is superior to other conservative options for the management of post labor sacroiliac subluxation.

Key words: Sacroiliac joint, conservative treatment, general anesthesia, post labor backache, sacroiliac subluxation.

1. Introduction

Postpartum backache is the pain that women experience it in the lower back immediately after labor [1].

Postpartum back pain is less common than pregnancy back pain. The usual temporary causes of back pain associated with pregnancy often end with the birth. For many mothers backache resolves in the first few weeks after delivery, but for some it may continue for months, and for a few it first presents postpartum [2]. Immediately after delivery, up to two thirds of mothers may suffer back pain. This is sometimes attributed to epidural analgesia in labor. Regrettably, many investigators have failed to distinguish between localized trauma at the site of insertion of epidural needle, which is not uncommon but usually causes transient pain, and generalized backache or sacroiliac strain, which may be reported by 40% of mothers who do not receive regional analgesia. Such symptoms may be a continuation of antepartum back pain or may result from excessive straining during the expulsive phase of labor [3].

2. Patients and Method

This prospective comparative study was conducted in orthopedic department in Al-Basrah General Hospital, during the period from July 2009 till October
Manipulation of the Sacroiliac Joint under General Anesthesia versus Other Conservative Treatment for the Management of Post Labor Backache due to Sacroiliac Subluxation

2010 on 21 female patients, their age were ranging from 20–42 years, with post labor backache (after 3 days of vaginal delivery till the end of puerperium).

The patients were evaluated by detailed history, thorough physical examination in addition to relevant laboratory and radiological investigations to diagnose the cause of post labor backache.

Special emphasis was placed upon the age, occupation, parity, onset of post labor back pain, site, severity & radiation of pain in addition to other neurological symptoms like numbness & paraesthesia were asked about.

A visual-analog (VA) scale of pain intensity was used [4]. This scale was a 10 cm long horizontal unstratified line spanning the entire experience of pain, ranging from 0 = no pain to 10 = severe intolerable pain. Each patient indicated how she experienced the pain intensity by making a mark on the line. The distance between the start of the line and her mark was registered as a measure of severity of pain. In addition, the location, distribution and quality of pain were also noted in each visit after treatment.

Visual analog pain scale

![Visual analog pain scale](image)

Physical examination:

(1) Measuring the weight and height of the patients, then the body mass index (BMI) were calculated according to special formula (Qutetelet’s index) [5].

\[
BMI = \frac{\text{Weight (kg)}}{2.205} \div \left( \frac{\text{Height (cm)}}{39.37} \right)^2
\]

The patients were classified into three groups according to this formula: (1) Normal weight: BMI = < 25, (2) Over weight: BMI = 25-30, and (3) Obese: BMI = > 30.

(2) Examination of lumbar spine and hip joints to rule out any pathology in these two regions as a cause of low back pain.

(3) Sacroiliac joint examination (local sacral tenderness; pelvic stress tests; diagnostic criteria of sacroiliac subluxation which includes:
- absence of lumbar spine and hip pathology
- pain in the sacral region
- a positive Piedallu’s sign (Fig. 1) (asymmetrical movement of the posterior superior iliac spine upon forward flexion)
- a positive pelvic compression test
- a symmetry of the anterior superior iliac spine
(Fig. 2).

Confirmatory signs of sacroiliac subluxation includes:
- straight leg raise
- flexion block (With the patient in a supine position, the knee is flexed at 90 degree and then passively pressed towards the chest. Flexion is blocked to one-half the expected range on the painful side).
- positive Patrick’s test (Placing one heel on the opposite knee, in the recumbent position, and simultaneously rotating the leg outward provokes pain).
- pain at Baer’s point (A point of acute tenderness just to the side and below the umbilicus on the painful side, which is about one-third of the way between the umbilicus and the ASIS).

![Fig. 1 Piedallu’s or locking sign](image)
Manipulation of the Sacroiliac Joint under General Anesthesia versus Other Conservative Treatment for the Management of Post Labor Backache due to Sacroiliac Subluxation

Fig. 2 Examination of ASIS with the left spine being higher than the right [7].

(4) Signs of general joint hypermobility.

Investigation included:

(1) Laboratory tests including: Hb%, PCV%, Hb electrophoresis, blood sugar, CRP.

(2) Pelvic X-ray (AP view) in weight bearing position and lumbo-sacral spine X-rays were taken.

(3) CT scan was requested for 3 patients & MRI for another 4 patients in whom the diagnosis was unclear.

Only twelve out of 21 women, met diagnostic criteria for sacroiliac subluxation, were included in this study, the other 9 patients were excluded because a herniated nucleus pulposus was diagnosed in three, symphysis pubis separation in four & coccydynia in the remaining two patients as the causes of low back pain rather than SIJ subluxation.

The 12 patients were divided blindly into two groups A and B, each group consisted of 6 patients. Group A were treated for 6 weeks by NSAID (Diclofenac sodium 100 mg daily ) and sacroiliac belt for 2 weeks, followed by physiotherapy for another 4 weeks in form of heat, infrared and physical exercise to encourage movement of the PSIS in supine & standing positions.

At the end of 6 weeks we re evaluate the patients by assessing there response of pain in addition by repeating the above mentioned tests to assess for improvement in SIJ alignment.

The pain either totally relieved (0-1 on VA pain scale), partially improved (2-8 on VA pain scale) or not improved (9-10 on VA pain scale).

If there is no improvement we repeat the same regimen of treatment for another 6 weeks then second reassessment at the end of 12 weeks.

Patients in group B were treated by manipulation of SIJ under general anesthesia. The technique is repeated in the same session in obese patients or at other time if there is partial or no response to first trial.

Three high-velocity low-amplitude (HVLA) thrust techniques of manipulation were used in current study depending on the findings & patient’s built as following:

(1) Rotation of the pelvis up/anteriorly on the painful side was applied after confirming that the PSIS is rotated down or posteriorly on the painful side in relation to the other PSIS (Fig. 3).

(2) Thrusting the innominate posteriorly on the painful side was applied after confirming that the ASIS is rotated up or anteriorly on the painful side in relation to the other ASIS (Figs. 4–5).

(3) Rotation of the pelvis down/posteriorly on the painful side was applied after confirming that the PSIS is rotated up or anteriorly on the painful side in relation to the other PSIS (Fig. 6).

Following manipulation patients were re evaluated for pain relieve and for improvement of SIJ alignment.

The patients were categorized in to:

- The pain was completely relieved either immediately or within one week (0-1 on VA pain scale).
- The pain was partially relieved (2-8 on VA pain scale).

Fig. 3 Sacroiliac joint, thrust the right innominate anteriorly on the painful side in side-lying position [14].
Manipulation of the Sacroiliac Joint under General Anesthesia versus Other Conservative Treatment for
the Management of Post Labor Backache due to Sacroiliac Subluxation

Fig. 4 Sacroiliac joint, thrust the left innominate posteriorly on the painful side in supine position [14].

(b)

Fig. 5 Sacroiliac joint, thrust the left innominate anteriorly on the painful side in prone position [14].

Fig. 6 Rotation of the pelvis posteriorly or downwards on the painful side [15].

- The pain was not relieved (9-10 on VA pain scale) within one week.
- Recurrence of the symptoms (9-10 on VA pain scale) after complete improvement and the time of recurrence.

Patients were instructed to use back belt as a sacroiliac belt & to do the physical exercises as a maintenance program to maintain stability and to prevent recurrence (Figs.7–8) and to return to the hospital if the pain had not totally subsided within one week or if they had any recurrence of pain within 12 weeks after first manipulation for re-evaluation and re-manipulation.

After second manipulation, the results were recorded as final results which were no improvement, partial relieve and complete relieve.

3. Results

Among twelve women with post labor sacroiliac joint subluxation who were included in current study 8 patient (66.6%) lie in age group 21–30 years old especially in 7(58.3) multipara mother (para3+).

Three quarters (75%) of studded patients had low back pain started during pregnancy (after 24 weeks of gestation).

Four patients (33.3%) were obese, 7 (58.3%) were over weight and one was normal body weight.

Post labor sacroiliac joints subluxation affecting left side more frequently than in right side & was recorded in 7 women (58.3%) of cases (Table 1).
Manipulation of the Sacroiliac Joint under General Anesthesia versus Other Conservative Treatment for the Management of Post Labor Backache due to Sacroiliac Subluxation

Table 1  Risk factors of sacroiliac subluxation.

<table>
<thead>
<tr>
<th>Risk factors</th>
<th>No. of patients</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abnormal body weight</td>
<td>11</td>
<td>91.6</td>
</tr>
<tr>
<td>Medically assisted vaginal delivery</td>
<td>8</td>
<td>66.7</td>
</tr>
<tr>
<td>Multiparity</td>
<td>7</td>
<td>58.3</td>
</tr>
<tr>
<td>General joint hypermobility</td>
<td>3</td>
<td>25</td>
</tr>
</tbody>
</table>

All women (100%) were presented with positive criteria of sacroiliac joint subluxation (Sacral pain, Piedallu’s sign, pelvic compression test, asymmetry of ASIS) & positive Patrick’s test, eight women (66.7%) had positive straight leg raise test, nine women (75%) had positive Flexion block test while pain at Baer’s point was recorded in three women (25%) only so it was a poor indicator in our study (Table 2).

Pelvic X-ray in weight bearing didn't show any abnormality in 8 patients (66.7%) but asymmetry of sacroiliac joints was detected in 4 patients (33.3%), left SIJ affected in 3 and right SIJ in one patient.

The outcome of treatment:

Group A (Table 3): At the end of 6 weeks 3 patients (50%) had partial pain relieve while the other 3 (50%) had no improvement. Piedallu’s sign & asymmetry of ASIS were positive in all patients (100%) & pelvic compression test was positive in 4 (66.7%) patients & negative in 2 (33.3%) patients.

The same regimen was repeated for another six weeks for all group A patients. At the end of 12 weeks the results were as follow:

One additional patient got partial improvement and the figure rises from 3 to 4, Piedallu’s sign & asymmetry of ASIS changed to negative in 2 (33.3%) patients and pelvic compression test in 4 (66.7%) patients.

Regarding the outcome in group A four women (66.7%) had partial improvement & two women (33.3%) had no improvement at all.

Group B:

Regarding the response of women in group B for manipulation of the painful side of sacroiliac joint under general anesthesia, three women had immediate total relief of pain, one of them had recurrence of pain after 3 weeks and second manipulation was performed resulted in total relief of pain. The other three women got partial relief after the first manipulation so a second manipulation was required; the pain was relieved totally in two and partially in one.

So complete pain relieve was achieved in 5 patients after single or double sessions of manipulations while the pain was partially relieved in the sixth patient even after 2 trials.

4. Discussion

Twenty one females with post-labor backache were evaluated for diagnosis of sacroiliac joint subluxation. The average age was 30.4 years (ranging between 20–42 years).

In this study twelve females (57.1%) met diagnostic criteria of sacroiliac subluxation, (95.6%) reported by Fraser [8] while (11%) reported by Daly [7]. These studies support the connection that sacroiliac subluxation is a common cause of severe low back pain in pregnancy.

Table 2  Distribution of patients according to the diagnostic criteria of sacroiliac joint subluxation.

<table>
<thead>
<tr>
<th>Sign and Symptoms</th>
<th>Negative</th>
<th>%</th>
<th>positive</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sacral pain</td>
<td>-</td>
<td>-</td>
<td>12</td>
<td>100</td>
</tr>
<tr>
<td>Piedallu’s sign</td>
<td>-</td>
<td>-</td>
<td>12</td>
<td>100</td>
</tr>
<tr>
<td>Pelvic compression test</td>
<td>-</td>
<td>-</td>
<td>12</td>
<td>100</td>
</tr>
<tr>
<td>Asymmetry of ASIS</td>
<td>-</td>
<td>-</td>
<td>12</td>
<td>100</td>
</tr>
<tr>
<td>Patrick’s test</td>
<td>-</td>
<td>-</td>
<td>12</td>
<td>100</td>
</tr>
<tr>
<td>Flexion block test</td>
<td>3</td>
<td>25</td>
<td>9</td>
<td>75</td>
</tr>
<tr>
<td>Straight leg raise</td>
<td>4</td>
<td>33.3</td>
<td>8</td>
<td>66.7</td>
</tr>
<tr>
<td>Pain at Baer’s point</td>
<td>9</td>
<td>75</td>
<td>3</td>
<td>25</td>
</tr>
</tbody>
</table>
The onset of backache due to sacroiliac subluxation took place during antepartum, and continued after labor in (75%) in the current study, (66%) in Berg [9] and (55%) in Daly [7] studies. Regarding risk factors of sacroiliac subluxation, general joint hypermobility was found in (25%) of cases, obesity (33.3%) and multiparity in (58.3%), in our study these risk factors not affect our selection of groups but we faced difficulties during applying manipulation in obese patients in whom repeated manipulation is required in the same session.

Women that delivered by medically assisted normal vaginal delivery (66.7%) were more prone to post labor sacroiliac subluxation than those delivered with out medical assistant (33.3%). We believed that the effect of analgesia and sedation made women free of pain and excessive thigh abduction during labor with concomitant relaxation effect of oxytocin resulting in excessive stressing of SIJ and sacroiliac subluxation.

Left SIJ involved more than the right one, but this had no significant effect on the outcome in both groups this result goes with that of Daly [7].

X-ray plays insignificant role in the diagnosis of SIJ subluxation as asymmetry of both sacro-iliac joints was detected in 4 patients only on weight bearing AP view of the pelvis while NAD was the result in two thirds of patients. This fact also raised by Gupta AD [10].

Spiral CT scan & MRI should be requested in doubtful cases to rule out other causes.

Regarding the outcome of the manipulative treatment, pain was relieved totally in 5 (83.3%) of 6 women, Daly [15] reported relieve of pain totally in 10 (91%) of 11 pregnant women & got obvious clinical improvement in pelvic alignment correlated with alleviation of pain.

In response to NSAID, pelvic belt and physiotherapy, pain was relieved partially in 4 (66.7%) women and 2 (33.3%) women got no improvement even after 12 weeks extension of the regimen. Gupta AD [10] study used NSAID and sacroiliac belt; other studies used sacroiliac belt [9] and physical therapy [11–13] as a conservative treatment with approximate outcome to our results.

Current study consistent with other [7, 8, 11–13] in that manipulation of sacroiliac joint is superior to conservative treatment for the management of post-labor sacroiliac subluxation.

Recurrence of symptoms after second time manipulative treatment was not recorded in this study as the use of support belt after manipulation produced more stability & minimal recurrence rate & this agrees with Golighty [12].

5. Conclusions

Post labor backache is distressing problem in considerable number of pregnant women with a lot of causes, Sacroiliac subluxation is one of the most important one. The diagnosis of sacroiliac subluxation can be made depends mainly on clinical bases as plain radiograph have a limited role.

Women with generalized joint hypermobility, obesity and multiparity are more prone to have post labor sacroiliac subluxation especially if delivered by medically assisted vaginal delivery.

Treatment by manipulation under general anesthesia is superior to other conservative modalities.

References

[5] National Institutes of Health (NIH), The practical guide: Identification, evaluation, and treatment of overweight and obesity in adults, Calculator: Body Mass Index (Qutetelet’s index), Bethesda: National Institutes of
Manipulation of the Sacroiliac Joint under General Anesthesia versus Other Conservative Treatment for the Management of Post Labor Backache due to Sacroiliac Subluxation

Health, 2000, NIH publication 00-4084, Up-to-date desk top 17.1.


