

# Effect of Gum Chewing on Duration of Postoperative Ileus after C-Section

RIZWANA ANJUM, ZOHRA KHANUM, SABA KHALID, MUHAMMAD ARSHAD HUSSAIN, SALMAN JAVED

<sup>1</sup>Senior Registrar, Lady Aitchison Hospital, <sup>2</sup>Professor Gynae/Obse, Sir Ganga Ram Hospital, <sup>3</sup>Postgraduate Trainee, Lady Aitchison Hospital, <sup>4</sup>Associate Professor Gynae/Obse, Lady Aitchison Hospital, <sup>5</sup>Assistant Professor, Sir Ganga Ram Hospital

Correspondence: Dr Rizwana Anjum, Email:anjulizh84@gmail.com

## ABSTRACT

**Summary:** Postoperative ileus is very common after abdominal operations, like C-section. Pain, stress of surgery, immobilization and bowel paralysis all contribute to this delay. Prolonged delay in ileus can lead to lengthen stay in hospital, low immunity, hospital acquired infections and complications. C-section, regarded as low risk procedure, is most frequently performing major operation being highest therefore, even minor improvement in caesarean care might have important social and economical benefits.

**Objective:** The objective was to compare the outcome in patients with C-section with and without gum chewing in immediate postoperative period.

**Study design:** Randomized control trial.

**Settings:** This study was conducted in the Obstetrics and Gynaecology, department, Lady Aitchison Hospital, Lahore.

**Method:** This study was completed from 01-12-2011 to 31-05-2012, 70 cases were selected (35 in each group). Sample technique was purposive non-probability sample.

**Results:** The mean age of patients of group A (Study group) was  $29.06 \pm 2.37$  years while of group B (Control group) mean age was  $28.23 \pm 1.92$ . The mean gestational age of patients in group A was  $37.74 \pm 0.61$  weeks while in group B mean gestational age was  $37.94 \pm 0.68$ . In group A, the mean time interval to passage of flatus for first time was  $19.82 \pm 1.33$  while  $27.04 \pm 0.91$  hours in group B which is statistically significant ( $p = 0.40$ ). The mean time to first post operative defecation  $23.72 \pm 1.13$  hours in group A while  $33.11 \pm 1.81$  hours in group B;  $p = 0.038$ , which is statistically significant. The mean & standard deviation was  $2.96 \pm 0.23$  for group A and  $3.06 \pm 0.48$  days for group B which shows statistically significant difference ( $p < 0.001$ ).

**Conclusion:** In study group A there were shorter time of first passage of flatus, less time of first defecation and shorter hospital stay of patients.

**Key words** C-section, Postoperative Ileus, Gum Chewing.

## INTRODUCTION

Postoperative ileus is very common after abdominal operations, including in C-section (C-section). C-section rates are continuously at the increase over past decades. A number of factors are observed to act as contributors to the development of postoperative ileus, including use of perioperative narcotics, gut handling during surgery, anesthetic drugs, use of abdominal packs during surgery and post surgical sympathetic hyperactivity. One simple intervention can be gum chewing. The mechanism of action of chewing a gum in improving bowel motility is through stimulation of cephalic-vagal reflex directly and secretion of gastrointestinal hormones indirectly, resulting in an increase in the release of saliva and

pancreatic secretions. Postoperative ileus is a major contributor to prolonged hospital stay, therefore, no matter whether it is consider normal or abnormal, it has significant economical impacts. It can occur with other procedures, including extra-peritoneal, gynecological and cardiovascular surgeries and it is the most common cause of delayed hospital discharge after abdominal surgery. The activation of inhibitory spinal reflex arcs mediate postoperative ileus through three distinct reflexes : i.e ultrashort reflexes limited to the gut wall, short reflexes which are mediated through prevertebral ganglia and the most important long reflexes, involving the spinal cord. Abdominal sympathectomy, spinal anesthesia and nerve-cutting techniques have proved to either

inhibit or decrease the development of ileus. The rationale of this proposed study is that gum chewing after C-section leads to rapid and fast recommencement of bowel motility and early discharge from hospital, with significant effect on decreasing the overall health care cost in our population.

**MATERIAL AND METHODS**

This study was carried out in the Obstetrics and Gynaecology department, Lady Aitchison Hospital, Lahore and Sir Ganga Ram Hospital Lahore. Objective of the study was to compare the outcome in patients C-section with and without gum chewing in immediate postoperative period. It was a randomized control trial and sampling technique was purposive non-probability sample. Duration of study was six months from 01-12-2011 to 31-05-2012 after taking the ethical approval. Seventy cases (35 in each group) is calculated with 80% power of test, 95% confidence level and taking mean±SD of postoperative hospital stay in both groups i.e. 40.8±10.6 in gum chewing group versus 50.5±8.9 in without gum chewing group in pregnant women delivered by C-section. Patient undergoing elective C-section who receiving general anesthesia, without prior abdominal or C-section, aged between 20 to 40 years of age were included in this study. Patient proceeding caesarean hysterectomy and other extensive intra-abdominal surgeries, surgery lasting longer than one hour, patient with gestational diabetes diagnosed by oral glucose tolerance test were excluded. Demographic information and operative characteristics was collected including patient’s age, gravidity, parity, gestational age (weeks).

Patient were randomly divided by using lottery method in two groups, Group A (study group) that comprised of thirty five candidates, who were directed to chew one stick of a sugarfree gum available in market (Wrigley’s Extra Gum) for fifteen minutes every two hours, starting two hours after surgery and keep doing that every two hours

till the flatus passage occurs, after which candidates were permitted to take oral clear liquids. Group B (control group) comprised of thirty five candidates. With exception to gum chewing, the same postoperative monitoring and program was used for control group. Primary outcome measures were the time to passage of flatus for first time, the time to first defecation and time till hospital discharge postoperatively. Normal vital signs, ability to ambulate and tolerate solid foods without emesis were the criteria for hospital discharge. SPSS (version 16) software for windows was used for Statistical analysis.

**RESULT**

In this study there were total seventy patients in both groups, thirty five included in each group who fulfilled the inclusion and exclusion criteria.

The age difference which was statistically not significant between two groups (Table 1). The mean gestational age of patients in group A was 37.74±0.61 weeks while in group B mean gestational age was 37.94±0.68 (Table 2). The results showed the followings among the time to first passage between 17.5-20 hours 22 (63%) patients in group A and no patient in group B. There was no patient in group A between 26-29 hours of first passage and 35 (100%) patients in group B. The mean time to first passage was in group A 19.82±1.33 while 27.04±0.91 in group B which is statistically significant (p 0.40) (Table 4).

Table 5 shows the mean time to first post operative defecation 23.72±1.13 hours in group A while 33.11±1.81 hours in group B; p=0.038), which is statistically significant.

There were 31 (89%) patients discharged from the hospital after 2 days in group A while 4 (11%) patients were discharge from the hospital after 3 days. Three (9%) patients were discharged after 4 days in group B and 32 (91%) patients were discharged after 3 days (Table 6).

**Table 1:** Age Distribution of Patients

| Age in years | Study Group (n=35) |            | Control Group (n=35) |            |
|--------------|--------------------|------------|----------------------|------------|
|              | No                 | Percentage | No                   | Percentage |
| 20 – 26      | 8                  | 23.0       | 10                   | 29.0       |
| 27 – 33      | 12                 | 34.0       | 15                   | 42.0       |
| 34 – 40      | 15                 | 43.0       | 10                   | 29.0       |
| Total        | 35                 | 100.0      | 35                   | 100.0      |

**Table 2:** Frequency of Findings of Patients

| Findings | Study Group<br>(n=35) |            | Control Group<br>(n=35) |            |
|----------|-----------------------|------------|-------------------------|------------|
|          | No                    | Percentage | No                      | Percentage |
| Gravida  |                       |            |                         |            |
| 0-3      | 26                    | 74.0       | 28                      | 80.0       |
| 4-6      | 9                     | 26.0       | 7                       | 20.0       |
| Parity   |                       |            |                         |            |
| 0-2      | 29                    | 83.0       | 33                      | 94.0       |
| 3-4      | 6                     | 17         | 2                       | 6.0        |

**Table 3:** Distribution of Gestational Age

| Gestational age | Study Group<br>(n=35) |            | Control Group<br>(n=35) |            |
|-----------------|-----------------------|------------|-------------------------|------------|
|                 | No                    | Percentage | No                      | Percentage |
| <39 weeks       | 32                    | 91.0       | 28                      | 80.0       |
| 39 weeks        | 3                     | 9.0        | 7                       | 20.0       |

**Table 4:** Comparison of First Passage of Flatus in hours of Patients

| Time (hours) | Study Group<br>(n=35) |            | Control Group<br>(n=35) |            | P value |
|--------------|-----------------------|------------|-------------------------|------------|---------|
|              | No. of Patients       | Percentage | No. of Patients         | Percentage |         |
| 17.5 -20     | 22                    | 63.0       | -                       | -          | 0.40    |
| 20.5 -23     | 13                    | 37.0       | -                       | -          |         |
| 24 – 29      | -                     | -          | 35                      | 100.0      |         |

**Table 5:** Comparison of Time to First Defecation in hours of Patients

| Time (hours) | Study Group<br>(n=35) |            | Control Group<br>(n=35) |            | P value |
|--------------|-----------------------|------------|-------------------------|------------|---------|
|              | No                    | Percentage | No                      | Percentage |         |
| 22 – 30      | 35                    | 100.0      | 4                       | 11.0       | 0.038   |
| 31 – 36      | -                     | -          | 31                      | 89.0       |         |

**Table 6:** Comparison of time till Hospital Discharge in days of Patients

| Hospital stay (days) | Study Group<br>(n=35) |            | Control Group<br>(n=35) |            | P value |
|----------------------|-----------------------|------------|-------------------------|------------|---------|
|                      | No                    | Percentage | No                      | Percentage |         |
| 2                    | 31                    | 89.0       | -                       | -          | <0.001  |
| 3                    | 4                     | 11.0       | 32                      | 91.0       |         |
| 4                    | -                     | -          | 3                       | 9.0        |         |

## DISCUSSION

In year 2006 multiple studies carried out by different authors in United States, revealed one third (31.1%) of births through cesarean section. For women of all age groups, different races, all periods of gestation and in all states, cesarean section rates increased to very high level over the

last ten year. There is significantly higher maternal and neonatal morbidity and mortality for women due to repeat cesarean deliveries, as compared to cesarean or vaginal deliveries without prior cesarean or abdominal surgery.

In a study by Delaney the postoperative ileus (POI) is a well-recognized complication of major gynecological and abdominal surgeries. In this

study, gestational age, the demographic data, first passage of flatus, defecation and duration of hospital stay were noted. The patients in the gum-chewing group, chewed gum three times a day for thirty minutes each time, as soon as they returned postsurgery to the ward until the time they defecated or were discharged. Groups were comparable in age, weeks of gestation, passage of flatus, time to first defecation and hospital stay. In the gum-chewing group gut sounds recommenced 5 hours earlier than in the control group. Passing flatus was about 8 hours earlier in study group than in control group. There is significant difference between the two groups. Gum chewing was accepted easily without any difficulties. It is a physiological, inexpensive, and convenient way in improving the recovery of bowel function and can facilitate early lactation, defecation, mobilization and hospital discharge. A similar study was carried out by Shang which is comparable with our study. Our study shows significant difference for passage of flatus for first time in the study group. In group A the mean time of first passage of flatus was  $19.82 \pm 1.33$  and  $27.04 \pm 0.91$  hours in group B. In relation to other study reported by Satij, duration to first passage of flatus (17.9 versus 24.4 hours) is statistically significant. Yet in another study conducted by Hasan, stay at hospital was shorter in the gum-chewing group (2.1 days) as compared to the control group (2.3 days). There is a minor difference with our study and comparable with the current study.

## CONCLUSION

It is concluded that quick recovery after elective C-section is clearly augmented with gum chewing, which is safe, well tolerated, reduces postoperative ileus and need of prolonged hospital stay. Hence gum chewing offers a simple way for early recovery of bowel function after C-section due to the good compliance and its effects on bowel function.

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