

Gum Chewing on Accelerating the Bowel Motility after Caesarean Section

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ABSTRACT

Background: Caesarean section is performed when it is indicated to prevent maternal and perinatal mortality and morbidity. However, it is associated with certain risks for complications that can hinder the comfort and early recovery after the surgery. Chewing gum as a form of sham feeding aids in resumption of gastrointestinal function among post caesarean mothers.

Aim: The aim of the review is to determine the effect of gum chewing on accelerating the bowel motility in post caesarean section.

Methods: Review search through PubMed, Google Scholar, Medline Plus and Scopus index.

Results: Gum chewing gum provided a significant differences in early return of bowel sounds, time to first passage of flatus, time to feeling of hunger and shortening the length of hospital stay.

Conclusion: Gum chewing might be a safe, and inexpensive way to provide the benefits of early stimulation of the gastrointestinal tract after caesarean section.

Keywords: Gum chewing, intestinal function caesarean section and post caesarean mothers

INTRODUCTION

Caesarean sections have become increasingly common in both developed and

developing countries for a variety of reasons. When medically indicated, caesarean section can effectively prevent maternal and perinatal mortality and morbidity ^[1].

Cesarean section is a fetal delivery through an open abdominal incision and an incision in the uterus. Since the first recorded cesarean section was performed around 1020 AD, the process has undergone significant development ^[2].

As with any surgery, caesarean sections are associated with short and long term risk which can impact the mother's health and her child with future pregnancies, extending for many years beyond the current birth ^[1].

Caesarean section is said to be associated with an increased risk for bowel obstruction, incisional hernia and abdominal pain, neonatal sepsis, meconium aspiration syndrome, early neonatal death, stillbirth, and surgical site infection, severe anemia, and heavy bleeding after delivery of the child. Smoking, obesity, and more than one section delivery all markedly increased the chance for these issues ^[3,4]. It also can delay the initiation of breastfeeding and shorten the duration of exclusive breastfeeding ^[5].

Furthermore, gastrointestinal problems after surgical procedure involves ileus, flatulence, nausea and vomiting. Postoperative ileus cause intestinal gas retention, abdominal distension, pain leading to woman's dissatisfaction and prolonged

hospitalization. Prevention and reduction of these gastrointestinal problems is necessary with the use of safest and least expensive method [6].

There are various methods to facilitate the restoration of bowel function and, as a result, expedite postoperative recovery, have been increasingly investigated. Chewing gum, as a stand-in for sham feeding, has been demonstrated to be able to accelerate the motility of the gastrointestinal tract by a series of controlled studies.

The purpose of the review is to determine the effect of gum chewing on acceleration of bowel function in post caesarean section.

Factors affecting the intestinal function after surgery

Variables influencing the recovery of gastrointestinal functions following caesarean section needs to be explored as it may provide clinical professionals a certain guidelines for the early detection and prompt treatment of postoperative problems, hence improving the recuperation outcomes of post caesarean mothers. The gastrointestinal dysfunction in post caesarean women is typically thought to be associated with the types of anesthesia, indication for the surgery, surgical trauma, prolonged labor, postoperative fasting and bedridden, electrolyte disturbance, maternal age, as well as mental disorders. Prenatal factors are also believed to have an enormous impact on surgical recovery. Therefore, it is crucial to investigate the contributing factors starting from prenatal period in order to achieve optimum gastrointestinal function rehabilitation post operatively [7].

In addition, anaesthetic and analgesic medications, immobility, intra-abdominal hematoma, intra-abdominal severe infection or sepsis, diabetes mellitus, local or generalized abdominal inflammation like pancreatitis have been reported to be the vital components altering recovery of the patients [8].

Mechanism of gum chewing on return of intestinal functions

In recent years, gum chewing as a kind of sham feeding was introduced with the intent of hastening the recovery of intestinal functions, by means of stimulating the cephalic vagal reflex [9]. This in turn activates intestinal myoelectric motion, increasing the hormones secretion, salivation, swallowing and secretion of pancreatic juice [10]. This reaction leads to likewise humeral and nervous activation of bowel motility [11]. Besides, sham feeding also enhanced duodenal alkaline secretion [12]. Therefore, chewing gum as a sham feeding is a simple strategy to stimulate motility of the human duodenum, stomach, rectum and the sigmoid for promoting the recovery of gastrointestinal function after abdominal surgery.

MATERIALS & METHODS

A review was performed by searching on the PubMed, Google scholar, Scopus index and journals at full text for studies published in English using the keyword “Gum chewing”, “intestinal function”, “Caesarean section” and “Post caesarean mothers”. The inclusion criteria included a study population of post caesarean mothers depicting the effect of gum chewing on intestinal recovery and functioning which is cited in English language. The study methods were quantitative study with true experimental or quasi experimental study design.

RESULT

There are several studies regarding the effect of chewing gum on bowel recovery in patients undergoing caesarean section as mentioned below:

1. Return of bowel sounds:

Alkalpler O et al. performed a study to assess the effect of gum chewing on bowel function postoperatively in women after cesarean delivery. The patient chewed gum at least three times for a minimum of 15 minutes and maximum of 30 minutes during the 2nd, 4th, and 6th hours after surgery and they did not eat anything other than gum for the first six hours. The result showed that the mean duration to the hearing of bowel sounds was

12.62±7.73 hours in the experimental group and 16.35 ± 5.20 hours in the control group (post caesarean mothers who receive only standard post-operative care ^[13]. This was corroborated by a study carried out by Abobaker RM to determine whether chewing gum has an effect on bowel motility among post-operative caesarean section where the participants were grouped into two groups. Participants in the experimental group were instructed to chew the chewing gum for 30 minutes 3 times a day after recovery from anesthesia. The findings revealed the mean timing of the first bowel sound to be 1.05 ± 2.25 hour in the experimental group (post caesarean mothers receiving chewing gum) and 7.38 ± 9.10 hour for the control group (post caesarean mothers receiving standard routine care) ^[14].

Similarly, Yenigul NN et al. sought to evaluate the effect of chewing gum on improving bowel function among women after cesarean section. Patients in the chewing gum group chewed for 30 min at 3, 5, and 7 hour postoperatively. They depicted that first bowel sound was heard at 4.93±1.05 hours and 7.97±2.33 hours in both groups postoperatively ^[15].

In the agreement, Manisha and Duhan N revealed that chewing gum has an effect on recovery of bowel activity wherein the mean time of bowel sound appearance in the experimental group (chewing gum group) was 3.27±0.95 hours and it was 8.22±2.0 hours in the control group ^[16].

The above mentioned studies had explored the positive effects of gum chewing on the regular gastrointestinal functioning in patients experiencing caesarean section.

2. Passage of flatus and faeces

The first passage of flatus and stool are a clear indication of the return of bowel functioning after surgery ^[17]. Studies have demonstrated that early postoperative feeding could be safe prior to the return of flatus and stool. A delay in the initiation of feeding eventuates in increased cell breakdown, elevated risk of infection and delayed wound healing, the need for more

intravenous feeding, and inevitably more expenses on healthcare system as well as the family.

A study carried out by Ledari FM et al. to investigate the effect of chewing gum in reducing ileus after caesarean section among nulliparous women reported that when the patients in the gum-chewing group postoperatively chewed gum 3 times daily each time for 1 hour until discharge, the time to first passage of flatus was found to be 25.02±5.8 Vs 31.08±9.7 hours and the first defecation 31.17±5.3 Vs 40.08 ± 8.8 hours in experimental and control group respectively ^[18].

Gayathri R et al. study supported by showing the mean time of first passage of flatus in gum chewing group and standard care group as (16.04±5.7 and 22.05±4.8), mean time of first passage of feces in were 27.08±3.2 and 32.04±4.3 in both groups where (gum chewing) patients received chewing gum 6 hours after the surgery, three times a day till passage of flatus ^[19].

The findings were consistent with Tufail N et al. study stating that experimental group chewed gum two hours after surgery until gut sounds were heard and nutrition was given orally. Reported mean time of flatulation was 26.33 ± 7.54 hours in the control group and 13.44 ± 6.56 hours in the experimental group ^[20]. In the same line, Akalpler O et al. study highlighted that the mean time of flatulation was 26.33 ± 7.54 hours in control group and 13.44 ± 6.56 hours in the experimental group ^[13].

Furthermore, a study conducted by Manzoor et al. have also substantiated that there was a significant difference in first passage of flatus in both the groups (8.39+0.94 hours in experimental group and 28.15+1.13 hours in control group) where experimental group received chewing gum to chew for 15 minutes every two hours after surgery between experimental and control group ^[17]. According to these comparable studies, chewing gum after surgery can hasten the passage of flatus, faeces and increase intestinal motility, which can improve patient comfort and financial efficiency.

3. Hunger

Since chewing generates a feeding feedback signals to the brain, it increases appetite and initiates feeling of hunger. Thus, considered to act as a virtual diet. This is supported by Gayathri R et al. study reporting that the mean time to onset of hunger was approximately 6 hours earlier in the gum chewing group than the conventional care group which was statistically significant ($p < 0.01$)^[19].

This result coincides with earlier research studies such as Ledari FM et al. and Yenigul NN et al. that has demonstrated a significant reduction in time to feeling of hunger among post caesarean section mothers^[15,18].

4. Length of hospital stay

Study evidence suggests that chewing gum after caesarean section improves the outcomes of the post caesarean mothers thereby shortening the length of hospital stay. Abobaker RM study revealed that the mean length of hospital stay among post-caesarian women were (1.05 ± 2.25 & 3.38 ± 5.10 days) for both groups respectively^[14]. A supportive findings was given by Gayathri et al. study where the duration of hospital stay was found to be reduced by 1 day in the intervention group^[19]. Likewise several studies concluded chewing gum as an effective method in terms of preventing complications, infections, improving patient's comfort and shortening the duration of hospitalization^[21].

DISCUSSION

Late onset of bowel movements after caesarean section causes the mother to feel uncomfortable and suffer difficulties in breast feeding along with pain and distension. Several approaches had been implemented to increase intestinal motility after abdominal surgery and this comes in congruent with ERAS protocol, all towards the aim to fasten recovery process in the postoperative period^[13].

In this review, all the interventions were compared between experimental group (chewing gum group) and control group (patients receiving no application other than

the standardized routine care post operatively). The time to start the administration of chewing gum varied from 2nd hour^[13,17,20] to 6th hour^[19] after immediate post-surgery. The duration for chewing ranges from 15 minutes to 60 minutes. There is no clear standardisation regarding the time at which the chewing gum should be given to the patient in the postoperative period.

The findings related to return of bowel sounds or intestinal sounds, time to first passage of flatus, feeling of hunger and length of hospital stay were found to significantly reducing and shorter in the experimental group as compared to the standard care group.

It was also mentioned none of the participants experienced adverse effects with the use of gum chewing. Post caesarean mothers who were instructed to chew the chewing gum group had significantly higher satisfaction further leading to fast recovery after the surgery^[15].

Notably, gum chewing may be a safe and feasible intervention for accelerating the intestinal function recovery in patients after caesarean section.

CONCLUSION

Chewing gum is a simple strategy for promoting the recovery of gastrointestinal function due to its tendency to mimic food intake, stimulating cephalic-vagal pathway further increasing the hormonal and secretory function. The available results obtained all supported its effectiveness in early intestinal stimulation to reduce complications and in bringing out the optimum maternal health, comfort and satisfaction among post caesarean mothers. Moreover, it is safe, well tolerated with low cost potentially reduces hospital costs.

Declaration by Authors

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