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Assessment of Physical Activity Level After One Month of Abdominal Surgery

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ABSTRACT

Introduction: Thoughearly ambulation is recommended following major abdominal surgery, presence of surgical drains/devices and the postoperative sequelae of hypotension, nausea, pain, and fatigue mean that achieving early ambulation as recommended is frequently not achieved.
Being physically active has been suggested as one way to enhance QoL and well-being. Thus, present study was undertaken to assess the physical activity level in post abdominal surgery patients after1 month.
Methodology: 139 patients (Age 18-59yrs, both genders) who had undergone open abdominal surgery a month back were randomly recruited after their consent. They were interviewed telephonically to assess their physical activity level after one month of abdominal surgery by using international physical activity questionnaire (IPAQ). Descriptive statistics by MS Excel was done to analyze gathered data.
Result: Most of the study participants were between 49-59 years and males and females were screened in equal proportion. 99% achieved 600MET/ week as assessed by IPAQ. 97% participant had returned to household, job and leisure related work activities. 81% of them were using abdominal binder.
Conclusion: 99% of the individuals had moderate physical activity level after one month of abdominal surgery.

Keywords: Abdominal surgery, postoperative, physical activity, IPAQ, Abdominal Binder

INTRODUCTION

Abdominal surgery can be categorized according to the location and length of the main incision. Upper abdominal surgery, an incision above umbilicus and lower abdominal surgery, incisions wholly below the umbilicus. Surgery may be open (with an incision >5cm), laparoscopic or a combination of both.[1]
Hospitalization may result in a rapid decline in physical function, especially in older adults due to adverse physiological effects of prolonged bed rest and immobility. Immobilization increases insulin resistance, impairs gastrointestinal function, results in de-conditioning of the cardiovascular, respiratory and musculoskeletal systems, and exposes patients to an increased risk of thromboembolism [(2)].
Early postoperative mobilization, a crucial component of enhanced recovery after surgery (ERAS) is safe and feasible and has shown association with improved health outcomes. Physical activity has a positive

impact on the immune system, blood circulation and bowel peristalsis Hence, early mobilisation might influence the development of postoperative complications, such as infections, thromboses, ileus, reduces hospital length of stay, thereby reducing care costs.. It has been observed that those who do not mobilize postoperatively are 3 times more likely to develop a postoperative pulmonary complication for each immobilized day. The evidence from several randomized controlled trials (RCTs), indicating that mobilization benefits both patients and the healthcare system. Early mobilization interventions also improve functional exercise capacity at hospital discharge following cardiac surgery. Though early ambulation is recommended following major abdominal surgery, presence of surgical drains/devices and the postoperative sequelae of hypotension, nausea, pain, and fatigue mean that achieving early ambulation as recommended is frequently not achieved. [2,3]

Lack of education and resources are modifiable risk factors for reduced mobilization/Physical Activity (PA) postoperatively. Thus, Education and clinical decision-making tools help in improving compliance with ERAS mobilization recommendations and create a culture that prioritizes perioperative physical activity. ERAS guidelines should emphasize the benefits of structured postoperative mobilization [3].

Physical activity (PA)is defined as any bodily movement produced by skeletal muscles that results in energy expenditure beyond resting expenditure [4]. It is an important component for recovery after surgery, as a way to reduce post-operative complications, improve functional recovery and to reduce length of hospital stay, reduce the incidence and intensity of postoperative fatigue, reduce pain and improve Quality of Life and well-being. [5,6]

Potential mechanisms of the PA and QoL/well-being relationship include PA-induced changes in brain neurotransmitters and endogenous opioids that are known to be associated with depression, anxiety, and other mood constructs [7]

The physical activity has mainly been assessed through self-reporting questionnaires or physical function tests. These tests usually assess activity and function at one point in time only.

International Physical Activity Questionnaire (IPAQ) is an instrument designed and developed for use in adults (age range of 15-69 years). IPAQ is administered via a telephonic interview and 7 day or usually a week's recall of physical activity is assessed. It is also used as an evaluation tool in some intervention studies. The Test-retest reliability of IPAQ ranged between 0.96 and 0.46, with an average of about 0.8. The scoring rules developed by the IPAQ International Expert Committee on Physical Activity says all PA levels in the questionnaire are converted into metabolic equivalents (METs), with weekly PA (METmin/week) =MET value ×PAtime (min) ×the number of activities per week. The PA intensity is divided into three intensity levels as per energy expenditure, High physically active (≥3000 MET-min/ week), moderately physically active (≥600 MET-min/ week) and physically inactive.[8]

Importance of early ambulation after abdominal surgery is very well documented in present literature pool but it lacks data regarding physical activity level in patients who have undergone abdominal surgery at least a month back. It is of importance to assess level of physical activity after certain period of abdominal surgery as generally patient tend to avoid much mobilization/ PA post any surgery due to lack of knowledge, fear/ kinesiophobia and then may subsequently lead to poor quality of life, late return to ADL/job/ leisure related work

Thus, the present study was undertaken to evaluate level of physical activity in abdominal surgery patients after one month of surgery.

MATERIAL AND METHODS

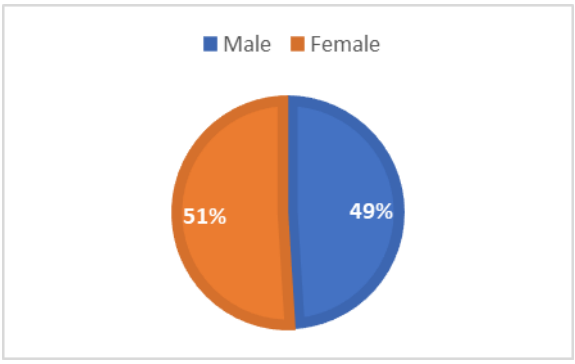
A cross-sectional observational study was done on Total 139 patients from community and physiotherapy OPD in Pune city after the study was permitted by IEC. The included participants were between age group of 18-59 years, both males and females and had undergone Open abdominal surgery (Upper as well as Lower, Elective as well as Emergency) and post-operative 30th day of open abdominal surgery. All the Patients had normal BMI -18.5-24.9 kg/m^2.[9] A verbal consent was taken from all participants who agreed to be a part of the study. Patients with any neurological, respiratory, psychiatric disease, musculoskeletal or cardiovascular problems, history of previous abdominal surgery and post operative abdominal surgery patients who developed any infections between 1 month were excluded. As it may hinder their participation/Limit in any Physical activity A self-made questionnaire consisting IPAQ questionnaire and demographic data was recorded from each participant over a telephonic interview after 30 days of surgery.

STATISTICAL ANALYSIS

Descriptive analysis of gathered data was done using Microsoft Excel.

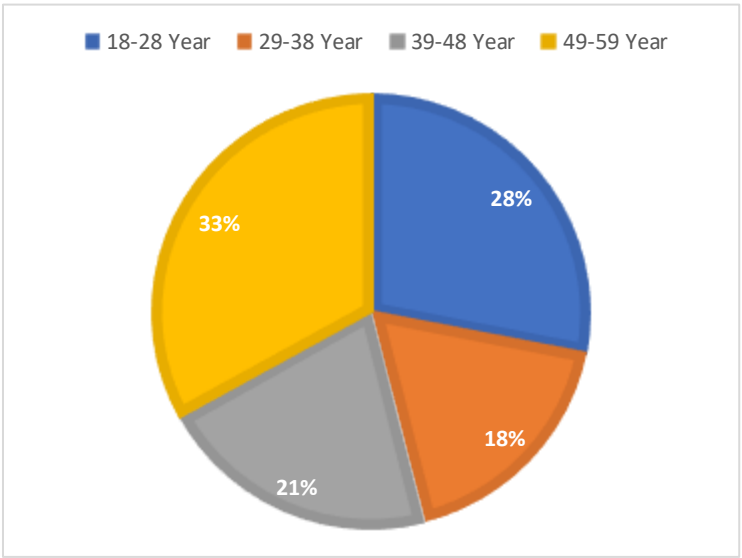
RESULTS

As seen in Graph 1 the study was done on 139 participants of which 49% were male and 51% were female.

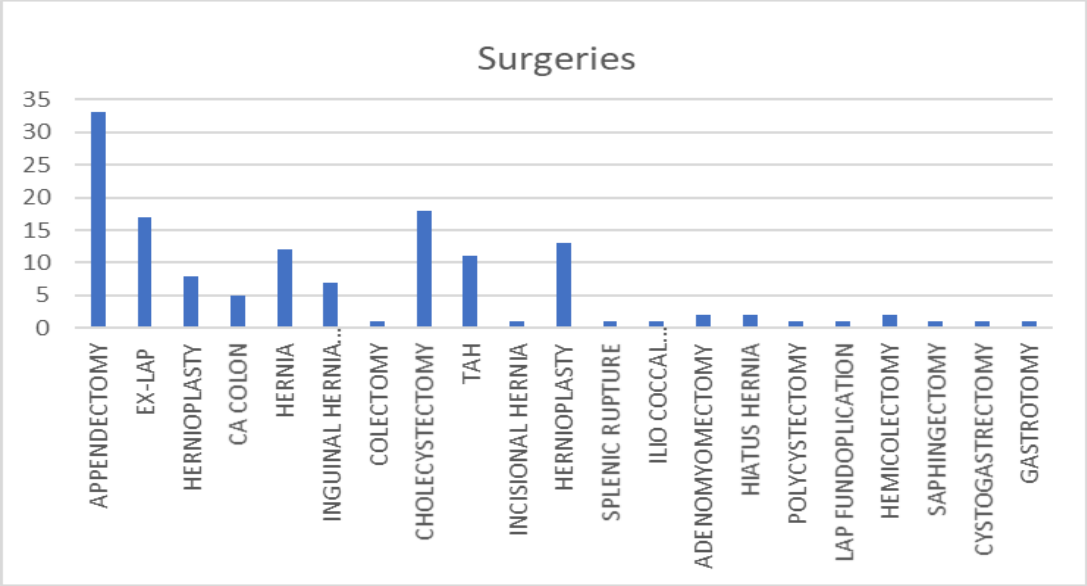


Graph 1: Gender wise distribution of study population

As seen in Graph 2 most of the study participants n=39 (33%) belongs to 49-59 years of age group.



Graph 2: Age wise distribution of study population



Graph 3: proportion of patients with various abdominal surgeries

As seen in Graph 3. study participants had undergone 21 different types of abdominal surgery. In that most (24%) participants had undergone appendectomy surgery.

After descriptive analysis it was seen that, 99% of the study participants had moderate physical activity level after one month of abdominal surgery as per the MET activity achieved by using IPAQ questionnaire.

Out of 139 participants135 i.e. 97% patients were able to return to work Household and Job related both after one month of abdominal surgery.

DISCUSSION

The purpose of this study was to assess the physical activity level after one month of Open abdominal surgery. Total 153 patients were screened during August 2023-December 2023 who had undergone abdominal surgery in and around Pune city. Out of 153 Patients, 139 were included in this study, rest were excluded because they did not meet with inclusion criteria.

As seen in graph 2, there was proportionate distribution of study participants under various age groups viz; Out of 139 individuals, 39 (28%) individuals belong to age group of 18-28 years, 25 individuals (18%) belong to age group of 29-38 years, 29 individuals (21%) belong to age group of 39-48 years and 46 individuals (33%) belong to age group of 49-59 years.

The primary goal of physiotherapy after abdominal surgery is to facilitate early recovery by preventing or treating postoperative complications and providing physical activity recommendations to aid in returning to premorbid physical function. This also impact several other domains like quality of life, well-being and reducing health cost. Rehabilitation is in given in preoperative, throughout the acute and subacute postoperative periods and may extend beyond hospital discharge into community-based or ambulatory care to assist with a return to normal activities of daily living and function[10]

Sebastian et al in 2022 did national and international survey of general surgeons on postoperative recommendations after abdominal and hernia surgery and suggested 2 weeks refraining from physical strain after laptroscopic surgeries and Four weeks of no physical strain after laparotomy and open incisional hernia repair. They also emphasized need of scientific evaluation for determining period of activity refrainement[11]

Usually lifting, pulling and pushing are not advised post abdominal surgery. Kimberly et al tried to expand understanding of Intra-Abdominal Pressure generation by

examining the relationship between weight lifting manoeuvre and quantity of weight lifted. They suggested that squatting is associated with generation of higher intraabdominal pressure than lifting from a counter or receiving weights into outstretched arms. Lifting > or = 2.5 kg results in significant changes in intraabdominal pressure, regardless of lift maneuver.[12]

Larissa F Weir in 2006 suggested that activities like getting out of a chair, lifting 8, 13, and 20 lb from a counter, lifting 8 or 13 lb from the floor, climbing stairs, walking briskly, or doing abdominal crunches does not increase intraabdominal pressure adversely in a postoperative period. Peak abdominal pressures ranged from 48 cm H2O while lifting 8 lb from a counter to 150 cm H2O when lifting 35 lb from the floor. Body mass index and abdominal circumference are positively correlated with peak pressures. Age and grip strength are not associated with abdominal pressure. The author further mentions that some activities commonly restricted postoperatively have no greater effect on intra-abdominal pressures than unavoidable activities like rising from a chair.[13] Thus, not much activities of Daily Living (ADL) are contraindicated considering the biomechanics and early return to ADL, Instrumental Activities of Daily Living (IADLs) and Job is advisable after abdominal surgery.

Present Literature pool suggests Major abdominal surgery is linked to decreased functional capacity, physical function, activities of daily living (ADL) and quality of life (QOL). It has been found that postoperatively, physical function improvement takes any time from 2 weeks to 6 months[14,15].

The relationship between physical activity and global QOL (satisfaction with life) in older adults over a 4-year period and reported that Physical Activity intervention was significantly associated with greater well-being/satisfaction with life. People engage in and continue to engage in activity because it improves their Quality of Life[16,17]

The results of current study shows that 99% of study participants could perform moderate level of physical activity i.e. they had one of the following three criteria:3 or more days of vigorous activity of at least 20 minutes per day OR 5 or more days of moderate-intensity activity or walking of at least 30 minutes per day OR 5 or more days of any combination of walking, moderate-intensity or vigorous intensity activities achieving a minimum of at least 600 MET-min/week

The probable reason for these results could be use of abdominal binders by most (81%) of our study participants. Abdominal binder is a wide belt which is used to hold and support the abdominal incision after surgery. As its shown to hasten healing and speed up the healing process. The entire abdomen is covered by an abdominal binder it aids in preventing the wound from opening, support the muscles of the abdominal wall during the recovery phase, particularly during mobilisation and deep breathing exercises, it also aids in preventing an incisional hernia and reduces postoperative pain, less seroma formation, better respiratory functions and postural consistency[18,19]. Compression increases blood flow and reduces swelling, both of which are key components of the healing process. This might have helped to be physically active after one month of abdominal surgery by reducing pain and better participation in physical activities.

In this study, 97% of individuals are able to do household work and 67% of the individuals had return to their job related work. The other probable reason for this could be that all the participants were recruited from urban region and were operated at multi-speciality hospitals where they had received physiotherapy treatment in post operative period.

This study can be further done to evaluate level of physical activity post abdominal surgery in various regions of India including rural and urban areas, various hospital set

ups, patients receiving/ not receiving physiotherapy treatment, patients using or not using Abdominal binder postoperatively. Also, effect of wearing abdominal binders on physical activity levels can be assessed.

CONCLUSION

99% of the individuals had moderate physical activity level after one month of abdominal surgery

Declaration by Authors

Ethical Approval: Approved

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Conflict of Interest: The authors declare no conflict of interest.

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