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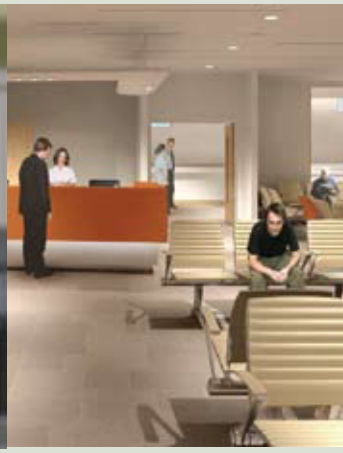

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Editorial

Doug McWhinnie

I am sure we are all looking forward to our biennial scientific conference to be held, on this occasion in Barcelona 10-12 May. For those of you presenting , either in a free paper section or as an invited speaker, would you consider providing the journal with a manuscript of your offering? I don't want to hear the usual excuses. . . . all articles have a place in our journal whether it is original research, a review or even opinion on some aspect of ambulatory care. All are welcome and I accept that for many, English is not a first language, but that is one of the uses of an editor!

To whet your appetite for Barcelona, we have 4 interesting articles in the edition, covering 4 differing topics. From Salford in England, we have a review of compliance of driving instructions after ambulatory surgery. While I think we would all agree that driving immediately after sedation or general anaesthesia poses a risk to fellow drivers, for how long does that risk persist? Received wisdom has always suggested cessation of driving for 24 hours but is that remit valid for the newer anaesthetic agents? Secondly , from the surgical perspective, for how long is there physical impairment to driving after a procedure? Read and find out!

As the influence of IAAS spreads geographically, it is important and valuable to see how ambulatory surgery is progressing in 'emerging markets'. In an article of current practice from a centre in Hyderabad, India, the authors are now demonstrating that ambulatory discharge (up to 23 hours after surgery) occurs in over 10% of their patients . So far so good, but of course the challenge for their centre is to discharge within 12 hours and promote true day surgery. Good luck!

The assessment and measurement of recovery and patient satisfaction after ambulatory surgery is the subject of a review article from Gothenburg and Stockholm. The authors are not necessarily suggesting that these outcomes are poorly measured, but that there is no consensus as to the system used for evaluation. The development of such tools would allow widespread benchmarking which could lead to improved patient care and more effective utilisation of resources.

Our 4th and final article from Naples addresses the link between inflammatory bowel disease and VTE. In a small study the authors found no increased risk of asymptomatic VTE when comparing controls in a normal healthy population and patients with Inflammatory bowel disease. They suggest therefore that screening inflammatory bowel disease patients for asymptomatic VTE before any form of surgical intervention may be of no value.

So, Ladies and Gentlemen, to return to the opening point of this editorial, let us start thinking now about your oral presentation in Barcelona and seek to convert it to print!

Compliance with driving instructions following anaesthesia for a day-case procedure

Mark Mitchell

Abstract

The study explored the behaviour of patients driving within 24 hours of a day-case procedure. Although advised not to drive for 24 hours, evidence suggests some patients are non-compliant. Of the 654 questionnaires returned, 3 people drove home following General Anaesthesia, 1 after sedation and 16 following Local Anaesthesia with 30 not responding. 10 elected to drive within 24 hours of GA, 5 following sedation and 58 following LA with 6 not responding. 73 therefore drove within 24 hours. A minority thereby arrived by car suggesting pre-meditated non-compliance. Patients should be requested to sign a disclaimer regarding driving prior discharge.

Keywords: Anaesthesia, ambulatory surgical, automobile driving, patient compliance, patient discharge.

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Introduction

Throughout Europe elective surgery has undergone considerable change with the increasing prominence of day surgery [1, 2]. In the United Kingdom approximately 62% of elective surgery is undertaken on a day-case basis [3] although the British Association of Day Surgery suggest this figure has the potential to rise to over 80% [4]. With the advent of modern day surgery its popularity in healthcare provision has grown, turnover has risen and patient dependence on professional care generally much diminished [5]. Further, the amount and variety of surgery that can be undertaken continues to rise due to the economic effectiveness of minimal stay surgery [6, 7].

Discharge planning for minimal stay surgery frequently commences in the pre-assessment clinic with patient information provision emphasised throughout the whole surgical experience [8, 9]. Patient and carer responsibility during the initial post-discharge days can be considerable [10], especially with the growth in surgical complexity [11, 12] hence the need for patients to be well informed. When first discharged, patients are not considered fully recovered from the effects of anaesthesia although deemed to be 'street ready' [13]. Chung, et al. [14] suggest three phases to recovery - early (emergence from anaesthesia), intermediate (co-ordination and physiological normalization allowing for discharge) and late (hours or days later when full psycho-motor functioning returns). In a review, it was found some discharge criteria were still based on older practices such as not permitting discharged until the patient was able to drink and void [15]. However, more contemporary means of ensuring patient suitability for discharge have been suggested [16] and the use of more formal measures to monitor post-discharge recovery employed [17].

One of the intrinsic values of minimal stay surgery for patients is greater choice and control over events with recovery at home being highly valued [18]. Awad and Chung [19] maintain the success and safety of ambulatory surgery is dependent, in part, on patient's adherence to the information and instructions received at discharge. Nonetheless, compliance with discharge instructions can sometimes be lacking with driving a vehicle following anaesthesia being a particularly sensitive issue [20]. Such non-compliance can be influenced by the public's possible perception 'one day surgery equates to one day recovery' [21]. In an early study of 100 patients, 31% journeyed home unaccompanied by a responsible person, 73% of car owners drove within 24 hours of surgery and 9% drove themselves home [22]. In a large survey by Chung, et al. [23], 55 (0.2%) patients were found to have no escort home although all claimed to have a home escort on admission. Correa, et al. [24] telephoned 750 patients 24 hours post-discharge to determine compliance with instructions and revealed 1.8% had consumed alcohol, 4.1% had driven a vehicle and 4% did not have a responsible adult with them for the first 24 hours. Similarly, Cheng, et al. [25] contacted 240 patients after 24–48 hours and uncovered 4.1% had driven a car, 1.7% made important decisions, 3.3% drank alcohol, 0.8% took sedatives and 10% cooked, ironed or looked after children. Cheng, et al. [25] further states the majority of non-compliance occurred the following day suggesting patients may view medical and nursing advice as over-cautious. In a review, Ip and Chung [26)]provide a flow chart for safe discharge of patients and recommended no patient be allowed to drive home after administration of an hypnotic, sedative or opioid. The availability of a carer for 24 hours post-discharge was further advocated together with transport home with an escort, easy access to a telephone and 'reasonable' home journey time [26].

In a survey of 70 anaesthetists, Cheng, et al. [27] found little agreement concerning how quickly patients should be allowed to resume normal daily activities after day surgery under general anaesthesia. Guidelines from the Driver and Vehicle Licensing Agency (DVLA) regarding post-surgery behaviour states any decision regarding driving must take into account recovery from the operation, recovery from anaesthesia, pain, impairment due to analgesia (sedation and cognitive impairment), physical restrictions due to surgery and other co-morbidities. Further, it is the responsibility of the driver to ensure he/ she is in control of the vehicle at all times and able to demonstrate this if stopped by the Police [28].

Few studies in the United Kingdom have recently examined patient compliance with instructions regarding driving following day surgery. With the continued growth in minimal stay surgery, greater patient choice and the public's possible notion 'day surgery equates to day recovery', ensuring compliance with driving restrictions may be

a wider challenge. An investigation into the recovery behaviour of patients following a day-case procedure and compliance with discharge instructions regarding driving was therefore undertaken.

Methods

Aim

To explore the behaviour of patients driving within 24 hours of undergoing anaesthesia for a day surgery.

Participants

A convenience sample of patients scheduled for elective surgery in one public Day Surgery Unit (DSU) were invited to take part on the day of admission. Potential participants were those undergoing general and local anaesthesia, having non-life-threatening, intermediate surgery; English or Polish speaking; and aged 18 years or more. Due to a recent rise in the number of Polish speaking people in the local study population, the questionnaire was translated into Polish (by Hospital Trust translators) for distribution to potential Polish participants. A small fee was paid for this service although translation back into English by a separate translator was included.

Data Collection

Data were collected over a 12 month period (Sept 2010 - Oct 2011). Clinical staff in the DSU distributed the questionnaire on the day of surgery. Potential participants were given a letter of invitation and an information sheet concerning the study. The letter of invitation and patient information sheet explaining the study was available in English and Polish as was the questionnaire. Questionnaires were to be completed at home 24–48 hours after surgery and returned in the 'freepost' self-addressed envelope provided. The questionnaire had 53 items with the vast majority utilising a Likert Scale format. Patient experience of the pre-assessment visit (n=11 items), day of surgery (n=6 items), journey home (n=6 items), home information provision (n=7 items), physical/ social recovery once home (n=12 items) and demographic details (n=7 items) were the main themes. However, this paper will focus solely on the data gained in association with driving a vehicle within 24 hours with further findings published elsewhere [29].

Results

The questionnaire was distributed to 2,401 adult patients for completion at home 24–48 hours post-discharge. Questionnaires were returned in the 'freepost' self-addressed envelope provided with 684 returned (29% response rate). Participants' ages ranged from 18 years to 108 years (mean 55.4 years). The majority spoke English (99%) with 1% Polish speaking. Participants underwent a variety of procedures, the majority under general anaesthesia (GA 49%, LA 45%, RA 5% and 0.1% sedation) (6 missing) (Table 1 & 2).

The most common method of transport home was by car (85.5%), taxi (9.6%) and public transport/ other (3.9%). Three (0.4%) participants drove home following general anaesthesia (GA), 1 (0.2%) after regional anaesthesia (RA) and 16 (2.3%) following local anaesthesia (LA) (Table 1). A total of 20 patients (3%) (5 females, 15 males) therefore drove home following an anaesthetic with a further 30 (4.5%) opting not to answer the question. Of the 30 who opted not to answer, 9 had undergone GA, 2 RA and 18 LA (1 missing) (possible total of 12 driving home following GA, 3 after RA and 34 after LA equalling a total of 7.1%). Of the patients who drove home, 6 (0.9%) had experienced orthopaedic surgery, 6 (0.9%) local anaesthetic injection for chronic back pain, 4 (0.5%) general surgery, 2 (0.3%) ENT surgery and 2 (0.3%) urological surgery (Table 1 & 2). Two males and 1 female drove following GA, 1 male after RA and 12 males and 4 females following LA. Furthermore, 90% (18) of the participants who drove home also drove within 24 hours (GA = 2 [males], RA = 1 [male] and LA = 15 [12 males, 3 females]). The average age of participants who drove home was 55.3 years (40 - 71yrs).

Of the 20 participants who decided to drive home, the majority viewed their length of hospital stay as 'about the right', which for the majority was ½ a day and 80% were 'very satisfied' with their day surgery experience. Eight of the participants who drove home lived with their spouse, 3 a partner, 2 with family although 7 lived alone. Of the patients who opted not to answer this item, 10 lived with their spouse, 3 a partner, 7 their family and 9 lived alone. No other aspect such as post-operative pain, surgery type, post-operative nausea and vomiting (PONV), experience of travelling home or number of dependence had an influence on the choice to drive home (Table 2).

Ten (1.5%) participants drove within 24 hours of GA, 5 (0.7%) 24 hours after RA and 58 (8.5%) after LA. A total of 73 (10.7%) therefore drove within 24 hours of a day-case procedure (Table 3). The patients who had experienced a GA had undergone gynaecological surgery (3), urological surgery (3), general surgery (2), ENT surgery (1) and cardio-version (1) (Table 3). A further 6 (0.9%) opted not to answer the question and of these 3 had undergone GA (ENT surgery 2, orthopaedic surgery 1) and 3 LA (orthopaedic surgery 2, local anaesthetic injection for chronic back pain 1). Again, if such patients were to be included a possible 13 (1.9%) drove within 24 hours of a GA. Of the 5 patients who had experienced RA, 4 had undergone orthopaedic surgery and 1 an injection for chronic back pain. Six males and 4 females drove within 24 hours following GA, 5 males following RA and 43 males and 15 females following LA. The average age of participants who drove within 24 hours was 59 years (34–77yrs).

Of the participants opting to drive within 24 hours, 37 lived with their spouse, 12 a partner, 6 with family and 15 lived alone (3 missing). Of these patients, 81% (n=59) rested at home for 1 day or less with 74% (n=54) stating they were happy with this length of time to rest. The majority (73% n=53) experienced no, slight or mild pain with 88% (n=61) stating they were recovered after 3 days. Fourteen patients experienced nausea once home but still drove with one patient experiencing a very large amount yet still drove. Four patients experienced a small amount of vomiting once home and one a very large amount although still drove within 24 hours of surgery. Four participants found recovery difficult or very difficult but again still drove within 24 hours.

Table 1 Driving Home, Anaesthesia Type and Day-Case Procedure (n=684) (Total n=20)..

Anaesthesia Type	Orthopaedic Surgery	Injection Chronic pain	General Surgery	ENT Surgery	Urological Surgery	
GA	1	0	1	0	1	3
RA	1	0	0	0	0	1
LA	4	6	3	2	1	16
					Total	**20**

Table 2 Driving Home, Day-Case Procedure, Post-Operative Symptoms and Demographics (n=684) (Total n=20).

Anaesth	Surgery	Pain	PONV	Exp. travel	Age	Depend	Gender	Living Arrang
GA	General	Very small amount	Very small amount	Very satisfied	40	1 or 2	M	Partner
LA	Ortho	Small amount	Very small amount	Very satisfied	41	1 or 2	M	Family
LA	Ortho	Medium amount	None	Mildly satisfied	45	None	M	Alone
LA	Ortho	Very small amount	Very small amount	Very satisfied	45	1 or 2	F	Spouse
LA	ENT	Very small amount	None	Mildly satisfied	45	None	F	Alone
GA	Ortho	Small amount	Very small amount	Very satisfied	47	1 or 2	F	Spouse
LA	General	Small amount	None	Very satisfied	48	None	F	Family
LA	ENT	Very small amount	None	Very dissatis-fied	52	1 or 2	M	Alone
LA	Ortho	Very small amount	None	Very satisfied	56	1 or 2	M	Spouse
LA	Injection for chronic pain	Very small amount	Very small amount	Mildly satisfied	57	1 or 2	M	Spouse
LA	Injection for chronic pain	Very small amount	None	Very satisfied	59	None	M	Alone
LA	General	Medium amount	None	Very satisfied	60	None	F	Partner
LA	General	Very small amount	None	Very satisfied	60	1 or 2	M	Partner
LA	Injection for chronic pain	None	None	Very satisfied	60	None	M	Alone
LA	Urological	None	None	Very satisfied	61	None	M	Spouse
RA	Ortho	Very small amount	Very small amount	Very satisfied	62	None	M	Alone
LA	Injection for chronic pain	Very small amount	None	Very satisfied	63	None	M	Spouse
GA	Urological	Very small amount	None	Very satisfied	66	None	M	Alone
LA	Injection for chronic pain	Very small amount	None	Very satisfied	68	1 or 2	M	Spouse
LA	Injection for chronic pain	None	None	Very satisfied	71	1 or 2	M	Spouse

Table 3 Driving Within 24 Hours, Anaesthesia Type and Day-Case Procedure (n=684). (Total n=73)

Anaesthesia Type	Orthopaedic Surgery	Injection for Chronic pain	General Surgery	ENT Surgery	Gynae Surgery	Urological Surgery	Knee Aspiration	Neuro-implant	Cardio-version	
GA	0	0	2	1	3	3	0	0	1	10
RA	4	1	0	0	0	0	0	0	0	5
LA	15	29	3	5	1	3	1	1	0	58
									Total	**73**

Discussion

Driving Home

The main findings from this survey of patients undergoing anaesthesia for a day-case procedure suggests a minority did not comply with instructions regarding driving a vehicle home or driving within 24 hours. The number of patients who drove home after an anaesthetic was 20 (3%) although this figure is very likely an under-estimate and 50 (7.3%) patients driving home may be a more accurate reflection. Of the patients who revealed they drove home, 3 drove following GA (1 female, 2 males), 1 following RA (1 male) and 16 following LA (4 females, 12 males) (Table 1). Of the 30 patients who opted not to answer, 9 had undergone GA, 2 RA and 18 LA (1 missing). If the total number who failed to answer this item were to be included, 12 (1.3%) underwent GA, 3 (0.3%) RA and 34 (2.6%) LA (1 missing). A total of 49 (7.1%) could potentially have driven home following a variety of surgeries and anaesthesia.

In an early study to examine patient compliance with driving instructions, Ogg (22) established 9% (n=9) drove themselves home following GA and 73% drove within 24 hours. Ogg (1972) recommended patients be requested to sign a disclaimer regarding driving, drinking alcohol and operating machinery. However, more recently it has been suggested lower doses of Propofol had little impact on psychomotor function and patients could drive home after 2 hours [30]. Likewise, following endoscopic procedures employing a bolus dose of Propofol 40mg for subjects <70yrs and 30mgs for >70yrs, Horiuchi, et al. [31] concluded recovery of driving ability was good after 60 minutes. Sinclair, et al. [32] also established certain driving skills returned after two hours following low doses of Fentanyl in a group of young healthy volunteers. However, in a study by Seidl, et al. [33] of Colonoscopy and Gastroscopy patients, 15 minutes of Propofol was administered (2.4mg/kg body weight) and it was concluded driving should not be permitted until an interval of 6 hours.

Of the patients who drove home following GA, 1 had undergone orthopaedic surgery, 1 general surgery and 1 urological surgery. The specific surgery undertaken was not recorded although the majority of patients underwent orthopaedic surgery (Table 2 & 3). Irrespective of anaesthesia employed, following arthroscopy it is accepted between 48 hours and 4 weeks should elapse before returning to driving [34]. However, Lewis, et al. [35] found the advice from orthopaedic surgeons regarding returning to driving to be inconsistent. Dalury, et al. [36] suggest up to 4 weeks because of the possible need for emergency braking. Employing 20 healthy volunteers and 20 arthroscopic knee surgery patients Chung, et al. [37] established patients demonstrated significantly more lapses in attention, micro-sleeps and lower reaction times and reduced road positioning ability 2 hours after general anaesthesia. It was concluded patients were only safe to drive 24 hours after GA.

As the number who acknowledged they drove home was low (n=20) no significant differences in demographic details or lack of satisfaction with treatment could be noted. However, patients who drove home tended to be older with an average age of 55.3 years (40 - 71 years), male (15 males, 5 females), 8 living with their spouse but 7 living alone (Table 2). Living with a partner appears to be no guarantee of availability to drive the patient home. Greater weight is possibly added to this when considering patients who did not answer the question. Of the patients who opted not to answer, 10 lived with their spouse, 3 with a partner, 7 their family and 9 lived alone. Laffey, et al. [38] noted patients who failed to comply with fasting instructions prior to surgery and planned to take public transport home alone or drive home alone were also predominately older males. This is in contrast to drinking alcohol and driving a vehicle where the most common age group to be prosecuted is 17–30 year old males [39].

The majority who drove home viewed their length of hospital stay as 'about the right', which for the majority was ½ a day and 80% were 'very satisfied' with their day surgery experience. No other aspect such as post-operative pain, surgery type, PONV, experience of travelling home (feeling ill during the journey) or number of dependence appeared to have an influence on the choice to drive home (Table 2). Indeed, two patients experienced a small amount of pain and PONV while travelling home but still continued to drive.

Driving Within 24 Hours

Seventy-three (10.7%) patients drove a vehicle the following day (within 24 hours of a day-case procedure) and 18 (2.6%) of these also drove home on the day of the procedure. Ten (1.5%) patients drove within 24 hours following GA, 5 (0.7%) after RA and 58 (8.5%) after LA. The surgery undertaken on the GA patients who opted to drive within 24 hours was gynaecological (3), urological (3), general (2), ENT (1) and cardio-version (1) (Table 3). Five patients drove within 24 hours of RA (orthopaedic surgery 4, local anaesthetic injection for chronic back pain 1). A further 6 (0.9%) opted not to answer the question and of these 3 had undergone GA (ENT surgery 2, orthopaedic surgery 1) and 3 LA (orthopaedic surgery 2, injection for chronic back pain 1). If the missing data were to be included, 13 (1.9%) may have driven within 24 hours of experiencing GA following a variety of surgery.

Some surgery types clearly have a longer recovery period than others which can considerably influence the ability to drive [16]. A number of studies have been undertaken on driving ability following upper and lower limb orthopaedic surgery. Goodwin, et al. [40] states few guidelines are available to assist orthopaedic surgeons in advising patients about returning to driving after surgery although Fleury, et al. [41] recommends 4 weeks absence following simple knee arthroscopy and 4-6 weeks after Anterior Cruciate Ligament repair (ACL). Moreover, it is recommended this period be extended for manual transmission vehicles. Conversely, Hau, et al. [42] advises a delay of 1 week after right knee arthroscopy (used for the brake) as reaction times are slower in the affected limb. In a survey of 112 patients regarding driving with an upper limb plastered, Kalamaras, et al. [43] discovered 50% never drove, 38% drove once and 22% drove

daily with males being the most common group (17–25yrs). Further, upper limb orthopaedic studies suggest poorer performance when wearing a splint/ plaster/ sling [44], especially on the left arm (used for gear shifts) in above elbow thumb spica as evasive manoeuvres when faced with hazards are diminish [45, 46]. In a review of the literature by MacLeod, et al. [47], 'Brake Reaction Time' and 'Brake Pedal Force' were deemed crucial aspects for safe driving and Von Arx, et al. [48] advise surgeons not to become involved in the decision to re-commence driving.

Of the participants driving within 24 hours, 37 lived with their spouse, 12 a partner, 6 their family and 15 lived alone (3 missing). In a large study by Correa, et al. [24], 1.8% disclosed they had consumed alcohol within 24 hours of day surgery, 4.1% had driven a vehicle and 4% did not have a responsible adult during the first 24 hours. Four females and 6 males drove within 24 hours of a GA, 5 males following RA and 15 females and 43 males following LA. The average age of participants who drove within 24 hours was 59 years (34–77yrs) with the majority again being male (74% n=54). Cheng, et al. [25] likewise found 4.1% had driven a car, 1.7% made important decisions, 3.3% drank alcohol, 0.8% took sedatives and 10% cooked, ironed or looked after children within 24 hours. In the present study, 81% (n=59) rested for 1 day or less and 74% (n=54) were happy with this length of time. The majority (73% n=53) experienced a little pain although 88% (n=61) were recovered after 3 days. In a survey of patients undergoing differing types of orthopaedic surgery (knee arthroscopy, hand/arm, foot/leg and shoulder) a similar amount of time was taken to recover although the shoulder surgery patients took approximately 2 weeks [49]. A number experienced nausea in the present study once home but still drove with one patient driving even with a very large amount of nausea. Four patients experienced a small amount of vomiting once home and one a very large amount although also still drove within 24 hours of surgery. Four participants found recovery difficult or very difficult but again drove within 24 hours.

Conclusion

A minority of patients made a clear decision prior to arrival at the Day Surgery Unit to travel to the hospital by car, park at or nearby and drive home afterwards. Moreover, 90% who drove home also drove within 24 hours of receiving differing surgeries and differing anaesthesia types. For a minority, irrespective of anaesthesia type or surgery undertaken, pre-meditated non-compliance appears highly applicable. Also, the figures concerning driving home and driving within 24 hours are likely to be higher than stated here. Older males and people living alone appear to be more prone to such behaviour although further studies are required using a larger sample of patients as this question remained unanswered on a number of occasions.

The rise in day surgery together with the public's possible association with minimal stay equalling minimal recovery [21], may give rise to more risky behaviour in the future. This has the potential to lead to an increase in accidents and litigation [20]. It has been recommended patients be requested to sign a disclaimer regarding driving, drinking alcohol and operating machinery prior to leaving the hospital. This will help safeguard the hospital staff and Trust against possible litigation in the event of an accident while travelling home or during the first 24 hours. Furthermore, it may be beneficial during routine post-operative telephone contact to reiterate any relevant points concerning safety. However, it has been stated telephone contact can be unwanted by some patients and that texting via mobile phones (mHealth) to remind patients of instructions/ medications may have greater impact [50]. Likewise, the future use of specific mobile phone applications (apps) for post-surgical care has much potential.

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Types of various surgeries in Day Care: A study from South India

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Abstract

Aim: Recent studies have shown day care surgeries play a major role in health care industry. We evaluated the profile, the time spent and the care provided to patients who underwent day care surgeries performed in the Department of General surgery at a tertiary care center.

Patients and Methods: We analyzed all patients who underwent day care surgeries at Yashoda hospital and study period from July 2012 to June 2014.

Results: Out of 1502 patients who were treated in the Department of General Surgery, 155 patients underwent day care surgeries. Among the 155 patients men were 95(61.2%), women were 49(31.6%), and 16(10.3%) were children. All patients went home between 8.5-23 hours after hospital admission and mean time to discharge was 20.5hours. Age ranged from 15-72 years and mean age was 45.6 years. The procedures performed included surgery for inguinal hernia in 40(25.8%), excision biopsy /cyst excision in 51(32.9%), fissurectomy in 15(9.6%), elective appendectomy in 15(9.6%), hydrocele in 8(5.1%), surgery for umbilical hernia in 5(3.2%) and circumcision in 7(4.5%) patients. On evaluation of complication assessed at follow-up after 7 days, 4(2.5%) had re-infections, 5(3.2%) had pain at surgery site and 1(0.6%) patient required re-admission.

Conclusions: Our study showed that day care surgeries are effective with low rates of complications. In our centre, this constituted 10.3% of all surgeries. Patients and surgeons require awareness for day care surgeries to reduce the time spent in hospitals and to be cost effective.

Keywords: Day care surgery, Yashoda hospital, Secunderabad, General surgery.

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Introduction

The health care industry has faced several developments and changes in the last two decade. At present health care system is being motivated by factors such as financial management, patient satisfaction with health care and time management. Recent studies have indicated that day care surgery or ambulatory surgery (AS) can offer significant advantages over inpatient surgery[1]. In the USA, it is estimated that around 60% of nonsurgical and surgical procedures are performed as day care[2]. The increased outpatient procedures or day care surgeries has largely been motivated by advances in medical technology and changes in payment process, which have allowed the ambulatory/outpatient surgery to become more lucrative in recent years[3]. In medical insurance driven health service areas such as the USA, there has been increase from 35% in the 1970s to now 95% payers who cover day care surgeries[4]. In India day care surgeries are still a new concept in health care[5]. Elective surgical procedures in selected patients can be performed easily and patients can safely return home on the same day. This saves time and finances of the patients and their families as well as decreases the burden on tertiary hospitals. The aim of the present study is to retrospectively analyze the various surgical procedures performed in the day care unit of the surgery department.

Patients and Methods

This study was retrospectively conducted in the Department of Surgery at Yashoda hospital Hyderabad. Yashoda hospital is a referral center in South India, the state of Andhra Pradesh and Telangana and study period between June 2012 and May 2014. During the two years 1405 surgeries were carried out at Department of Surgery. Out of theses only 175 patient day care surgeries were performed. Among 175 patients, 155 patients had details of their follow up at one week after surgery and were included, while the remaining 20 patients were lost to follow-up.

We collected all the patient's medical histories, type of surgeries performed and the time of their stay from the hospital medical records and follow-up on 3rd and 7th day of post operative. This study was approved by Institutional Scientific committee (ISC). A day care surgery is defined as a procedure in which the patients undergo elective operation on the day of their admission and are discharged within 24 hours after surgery[6].

Including criteria

Patients who fulfilled the criteria of day care surgery and had regular follow-up on 3rd and 7th days post surgery.

Excluding criteria

Patients with more than 24 hours stay in the hospital and those with incomplete follow up data were excluded from the study.

Follow-up Postoperative care

Post operative examination of all day care surgery patients were performed at 3rd and 7 day for outcome and complications such as infection, re-admission or pain at surgery site[7,8].

Statistical analysis

All patients' data was incorporated in database for data analysis. Data analysis was performed using Statistical Package for the Social Sciences (SPSS) statistical package (version 16). Continuous variables were analyzed as means ± standard deviations and categorical variables were analyzed.

Results

In our study, men were 95(61.2%) children 16(10.3%) and women were 49(31.6%), age range 15-72 years and mean age was 45.6 years. The mean time to discharge from admission was 20.5 hours and discharge time ranged from 8.5–23 hours (Table.1).

The most common surgeries performed in day care were excision biopsy /cyst excision in 51(32.9%) patients followed by surgery for inguinal hernia in 40(25.8%) patients. The other surgeries included elective appendectomy in 15(9.6%) patients, fissurectomy in 15(9.6%) and breast lumpectomies in 5(3.2%) (Table 2).

In follow-up period, at 7th day we found four patients had infection(one in umbilical hernia, two in excision biopsy /cyst excision, one in abscess removal) one patients had re-admission and five patients had pain at surgery site (Table 3).

Discussion

In our study, we noted that only 9.7% of day care surgeries were carried out at department of surgery in our hospital. This is in contrast to the west, where more than half of all general surgeries are performed as day care[9]. The percentage of daycare surgeries in UK is around 50% while they constitute 60% of cases in USA[10,11]. Glass et al noted in his study that only high risk surgeries like umbilical hernia, transurethral prostate resection and haemorrhoidectomy are performed in lower percentage as day care surgeries[4].

In India, day care surgeries still constitute less than 15% among all surgical specialties[12]. In our study, we found that approximate 30% of all day care surgeries are related to excision biopsy/cyst excision, while 25.8% are surgeries pertain to inguinal hernia.

Hernia repair

Hernia repair is one of the common general surgical procedures worldwide. In our study day care laporoscopic hernia repair was conducted only in 10 patients (6.4%) while open surgeries was performed in 25% as day care surgeries. This is a very low number when compared to the rest of the world[13]. Almost all hernia repairs are now being performed as day care surgeries in many countries, 90% in United States, 80% in Denmark, 78% in Canada, 75% in Sweden and 70% in Norway. However the other European countries have a more conservative approach with a lower percentage i.e., 50%

Table 1 Baseline Characters.

Parameters	**Numbers** (n=155)
Men	95(61.2%)
Women	49(31.6%)
Children	16(10.3%)
Mean age	45.6±4.5
Age range	15-72
Mean time of discharge(hours)	20.5±2.4
Time range discharge (hours)	8.5-23
Cash paying	140(90.3%)
Incurrence/Government paying	15(9.7%)
Low Socioeconomic	120(77.4%)

Table 2 Types of procedures in day cases.

Types of surgeries	**Number** (n=155)
Inguinal Hernia	40(25.8%)
Umbilical Hernia	5(3.2%)
Hernia repair	10(6.4%)
Abscess removal	3(1.9%)
Hydrocele	10(6.4%)
Excision biopsy /cyst excision	45(29%)
Hemorrhoidectomy	6(3.8%)
Breast Lump	5(3.2%)
Elective appendectomy	10(6.4%)
Fissurectomy	15(9.6%)
Circumcision	7(4.5%)

Table 3 Complications during follow-up at 3rd and 7th day.

Types of surgeries	**Re-infections**		**Re-admissions**		**Pain at surgery site**	
	3rd day	**7th day**	**3rd day**	**7th day**	**3rd day**	**7th day**
Umbilical Hernia	0	1(0.6%)	0	0		0
Inguinal Hernia	0	0	1(0.6%)	0		0
Excision biopsy / cyst excision	2(1.2%)	0	0	0	1(0.6%)	0
Hemorrhoidectomy	0	0	0	0	2(1.2%)	
Abscess removal	1(0.6%)		0	0	0	0
Elective appendectomy	0	0	0	0	2(1.2%)	0
Total number	3(1.8%)	1(0.6%)	1(0.6%)	0	5(3.2%)	

in Finland, 45% in England, 40% in Netherlands, 30% in Italy, 20% in Belgium and 25% in Hong Kong and[14,15]. This is a credit to the fact that inguinal hernia repair performed as a day care had low rate of complications[16,17]. In our study also we found not mortality in inguinal hernia.

Pediatric surgery

Pediatric day care surgeries are widely accepted and practiced in developed and developing countries. 18 In our study, 9 (5.8%) elective appendectomies 4(2.5%) circumcisions and 3(1.9%) hydrocele surgeries were performed as day care surgeries. Managing pediatric patients is more time consuming and the apprehension of parents may contribute to the low numbers of surgeries. In a recent study on pediatric day care surgeries, 17.1% in patients had earlier operations when they were admitted for herniotomy and lump excision[18]. In Europe and North America pediatric day care surgeries are being increasingly performed in many case and follow-up is done by family physician or general practitioners in the community or by telephone[19].

Mean length of staying

In our study, the mean length of hospital stay was 20.5±2.4 hours and ranged from 8.5–23 hours. Similar findings have been noted by Phillips et al who demonstrated a hospital stay range of 05–23 hours[20] and Pota et al noted 5-15 hours[8]. Gupta et al showed stay range 4-21hours and mean stay7.3 hours[21].

Follow-up

In our study we established a low rate of over all complication at follow-up (6.4%) at 7 days without any mortality after day care surgery. This was advocated by Ramyil et al who also compared and found significantly lesser complication in day scare surgeries compared to in-patients surgery[16]. However Russell et al and Kornhall et al in their studies found no significant difference in postoperative complications in between day care surgeries and in-patients surgeries[22,23].

Pain at surgery site

Pain is one of the complications feared by patients and attendants post operatively. This often may lead to patients opting for inpatient services for access to injectable pain killers. In our study we found severe pain at surgery site was complained by only 3.4% of all day care surgery patients. Similar reports of low incidence of severe pain have been demonstrated in other studies[7,8,14,18]. On the other hand a decade earlier, Beauregard et al has found in his study that 25% of all patients with day care surgery had moderate to severe pain[24]. Further the persistence of pain was related to the effective pain management in the first few hours after the surgery[24]. The improved rates may be due to better case selection and may be due to newer and more potent analgesic use in the recent times. Still it is important to evaluate and effectively manage post operative pain for gaining the most benefit from day care surgeries.

Infection

Our study noted infection at site of surgery in 3 patients (1.8%) – these included patients with excision biopsy and abscess drainage. This is similar to previous findings by other researchers[8,13,21]. The infection rates in previous studies from Asia are however higher with reported prevalence of 7.7% by Pardhan et al[25]. The rates of infection may be influenced by the socio-economic status, hygienic practices and the type of surgeries performed.

Readmission

The present study revealed a readmission rate of 0.6% after day care surgeries. Worldwide the re-admission rates range from 0.28% to 3.6% in day care surgeries[13,15,26]. Generally most patients get readmitted for pain or other complications. Only a small proportion of them have requirement for redo surgery and this has been noted in patients after hernia repair[7,13].

Mortality

In our study over 2 years, mortality was 0% after day care surgery, our study findings are advocated by others.14 A recent study showed mortality in day care was extremely low (<1%)[15]. The cases eligible for daycare surgeries, the techniques used are all geared towards low mortality and thus this awareness should be imparted to patients or patient caregivers to increase the utility of day care surgeries[27].

In our study we noted minor complication in around 25% of day care patients such as headache, nausea, vomiting, sore throat fatigue and drowsiness. These are common symptoms and in our study did not affect the activities of daily living in most patients. Occasionally the presence of these symptoms can affect the length of stay and time to discharge and cause difficulties in daily activities at home[15]. A proper counselling regarding these symptoms pre-operatively can help patients cope better.

Pitfalls of study

In our study we assessed the prevalence of day care surgeries being performed in a tertiary care hospital. We only included the ambulatory surgeries being conducted at surgical department, we did not include departments such as orthopaedics. We have not analyzed the other aspects of the surgery such as mean duration of surgery, the length of the surgery. Although all patients were evaluated and received appropriate analgesic care, we have not analyzed the various analgesics protocol being followed at our institute. Another drawback is that we could not compare between inpatients and day care surgeries in terms of cost effectiveness and patient satisfaction as it was a retrospective study.

Conclusion

In our study, during the two year study period we performed only 9.5% day care surgeries in surgery department. Compared to Europe and USA studies our performance is low. Our study has established that day care surgeries can be performed with very low morbidity and no mortality in India.

In the present scenario day surgeries play a vital role in the health care industry and it will be an integral component of health care in the future. A day care surgery places different demands on various skills of each specialty (surgical and non-surgical) involved and especially requires special effort in anaesthesia and nursing care. It is increasingly seen as a better option with lesser difficulties for patients with ambulatory surgeries compared to inpatient surgeries. Worldwide, the surgeons are geared to counsel patients to undergo day care surgeries and health care providers have started creating the environment conducive for day care surgeries in all specialties. Carey et al noted in his study the emergence of day care surgeries which are like "focused factories', specialized in treatment of specific diseases meted as a single line of service[28].

The advantage of day care surgeries are that they have higher efficiencies and lower costs, with ease of hospital accommodation and lesser time spent in waiting. Day care results indicate quicker and faster recovery. Patients can easily return to their normal environment i.e., return home and do their daily activities. The major advantage is reduced risk of cross-infection or hospital acquired infection and minimal anaesthesia related complication. Day care surgeries are comparatively inexpensive and affordable in all socioeconomic classes. Another benefit for the patients is the possibility to book a procedure on a dedicated day for surgical procedure without the fear of cancellation of surgery due to emergencies or shortage of beds in hospitals. Health care providers benefit from day care procedure for patients as the turnover is faster and more patients can be

accommodated with reduced waiting lists. Surgeons satisfaction is also very high, they can rapidly provide high quality care for appropriate patients and plan surgical procedure according to their needs and allot only major surgeries as inpatients.

The drawback of day care surgeries are that they only selective cases can be performed and most of them are elective not emergency cases. As planed surgeries, it is required for patient or patients relatives to be aware of the surgery or procedure and care required at first 24–48 hours after surgery at home especially in children and elder age group. Another drawback is large number of patient admitted in outpatient department make it difficult for surgeon to separate the patients into those fit for day care surgery and patient counseling. The patients factors play an important role in day care surgery like age and sex. After surgery patient follow up is required up to 7 days with easy access to a telephone and if required repeat hospital visit for any adverse reactions.

Indian Association of Day Care Surgery stared in 2003 but still it is in its infant stage. The major reasons seem to be a lack of awareness of the facilities among patients and their relatives, fear of complications, distance of hospitals from their residence as well as lack of health professionals geared to offer these procedures. Health insurance companies in India also lack the insight to provide for day care surgeries and insist on more than 24 hours admission to avail the claim. In our center day care patients were mostly cash payers (90.3%) and very few got paid under state or central government health schemes (9.7%). In USA and Europe, the successes of day care surgeries have helped in including them under insurance coverage without any payment obstacles.

India is a large country with limited health care resources catering to a huge population. There is an immediate need for more dedicated day care centers for rapidly helping the patient load. There is also a requirement for increasing awareness programs for patients and health care providers in the Indian sub content. The appropriate training should be initiated early in the medical colleges with frequent CME (continuing medical education) programmes for doctors and other health care personnel to continue awareness should be conducted often.

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Apple and bananas when comparing recovery and patients satisfaction following day surgery

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Abstract

There is still no consensus around how to assess performance, recovery and patient satisfaction following day care anaesthesia and surgery. This review considers metrics that might be used to assess these phases of day surgery care.

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We are all aiming at improving performance. Anaesthesia should include smooth induction safe and effective intra operative anaesthesia and for the day case a rapid and complete recovery with a minimum of pain and other side effects. Emergence is usually assess by time from cessation of anaesthesia until response to command, e.g. eye opening, spontaneous breathing and thus extubation or removal of the LMA. The early intermediate recovery has been assessed by the Aldrete scale [1] but is today not uncommonly assessed by the possibility to fast track, defined as patient being sufficiently awake to by-pass the recovery area going directly to a "step-down" unit.

Criteria for facility discharge have been described by Chung as the Post Anaesthesia Discharge Scoring System already in 1993. This score suggested one hour of stable vital signs, no respiratory depression, Patient should also be oriented to person, place, time, able to dress and walk unaided, maintain orally administered fluids, and void. Patient was further to have minimal PONV and pain. Ead [2] made a comprehensive but effective review around discharge criteria in 2007 concluding that comparative studies on the reliability of the different discharge criteria in use are extremely limited. Discharge may be assessed by strict criteria but is not uncommonly merely defined when patient is able to stand and walk and with acceptable control of pain and nausea. The discharge is also dependent on logistics - how active the nurse team works to promote recovery and whether, despite criteria otherwise, still require the patient to be able to drink, eat or void.. There is a recent paper from US [3] describing laparoscopic appendectomy direct discharge from the PACU. In a retrospective chart review of more than 800 cases, average time between end of anaesthesia and discharge was merely some 2 hours and 42 minutes. Satisfaction with early recovery is much dependent on staff interventions, recovery room personnel as well as surgeon . [4]

We are struggling to assess also the more protracted recovery. Follow-up and outcome in terms of major morbidity, re-admission and return-to hospital has shown ambulatory/day surgery reassuringly safe. Still, reasons for return to hospital as well contact with health care early following discharge are important quality criteria [5,6]. Majholm et al [7] presented the results from review of recorded data from 57,709 day surgery procedures performed in eight day surgery centres over a 3-year period in the Copenhagen area. The overall rate of return hospital visits was 1.21% caused by a wide range of diagnoses. No deaths were definitely related to day surgery. The return hospital visits were due to haemorrhage/haematoma 0.50%, infection 0.44% and thromboembolic events 0.03%. The surgical procedures with the highest rate of complication were tonsillectomies 11.4%, surgically induced abortions 3.13% and inguinal hernia repairs 1.23%. Major morbidity was rare. Thus results much like the classical study by Warner et al [8]. We include increasing numbers of older, sicker and more fragile patients as well as more complex procedures as day cases, thus follow-up of hard outcome should be conducted on a more or less continuous basis. Follow-up of the more protracted recovery including patient satisfaction has also a huge interest in terms of quality of care, and should possibly be measures for open comparisons between units. Philips showed that a simple questionnaire do provide important feedback, describing frequent experience of minor symptoms for several days [9].

There are today several structured tools for the assessment of recovery:

- Quality of Recovery Score (QoR score) (Myles et al. 1999)
- Quality of Recovery Score 40 (QoR-40) (Myles et al. 2000)
- 24-Hour Functional Ability Questionnaire (24-h FAQ) (Hogue et al. 2000)
- Post discharge Surgical Recovery Scale (PSR) (Kleinbeck 2000)
- Quality of Life After Abdominal Surgery (Urbach et al. 2006)
- Functional Recovery Index (FRI) (Wong et al. 2009)
- Postoperative Recovery Profile (PRP) (Allvin et al. 2009, Allvin et al. 2011)
- Postoperative Quality Recovery Scale (PQRS) (Royse et al. 2010)
- Surgical Recovery Scale (SRS) (Paddison et al. 2011)
- Quality of Recovery Score 15 (QoR-15) (Stark et al. 2013)

Chanthong et al [10] published in 2007 a review of available recovery assessment tools concluding there is still no valid or reliable questionnaire for measuring patient satisfaction in ambulatory anaesthesia. Further study should be conducted to develop standardized instruments to measure this outcome. Herrera et al [11]

conducted a similar review assessing recovery assessment scores and commented, only one instrument, 40-item Quality of recovery score, fulfilled all eight criteria, however this instrument was not specifically designed for ambulatory surgery and anaesthesia. Sällila et al [12] conducted a similar review around assessment of patients' satisfaction following outpatient care. Thirty-five articles were included. The quality of care was measured using both quantitative and qualitative methods. Patient satisfaction is widely used as one indicator among others in assessing the quality of outpatient care. However, there is no single, universally accepted method for measuring this.

The Postoperative Quality of Recovery scale (PQRS) was developed and validated in 2010 [13]. Bowyer et al [14] published a review around assessment of recovery in 2014. They commented that the PQRS assesses recovery in multiple domains, including physiological, nociceptive, emotive, activities of daily living, cognition and patient satisfaction. It addresses recovery over time and compares individual patient data with base line, thus describing resumption of capacities and is an acceptable method for identification of individual patient recovery. The PQRS include an overall patient perspective; patients rate of their recovery with respect to their activities of daily living, clarity of thought, ability to work, and satisfaction with anaesthetic care. This is reported on a 5-point scale in the same manner as nociceptive. Return to work is only applied to those who currently work and intend to return after surgery. This domain differs from the others because there are no baseline measurements. It is complimentary to the other "recovery domains" but is not included in analysis of return to baseline. There is obvious room for further studies in order to show whether the PQRS could be a feasible and effective toll for assessment of recovery and patients satisfaction also following day surgery. The questions have been tested and found valid for phone follow-up in healthy volunteers [15]. The Quality of Recovery score 15 items is a short version of the QoR40 recently tested and found accurate and effective [16]. The QoR tool provides a sum result that can be followed over time making comparisons between groups possible.

There is still no consensus around how to assess performance, recovery and patient satisfaction following day care surgery/ anaesthesia. Return to hospital and or need for medical consultations in outpatient clinics, or general practitioner caused by surgery/ anaesthesia is an important quality indicator. There is a need for generally accepted simple and easy to use tool for follow-up assessment in order be able to compare performance between centres, possibly providing open comparisons. There are different initiatives such as the SAMBA Clinical Outcomes Registry SCOR [17]. The American Society of Anesthesiologists (ASA) and its partner, Anesthesia Quality Institute (AQI), have likewise developed a physician quality reporting system, the National Anaesthesia Clinical Outcomes Registry (NACOR) [18]. A national initiative has also been taken in Denmark following thoracic surgery [19]. Rapid and high quality resumption of activity of daily living, being able to go back to work perform everyday tasks have many implications. Effective benchmarking could possibly improve both patient quality of care and utilisation of health resources. Open comparisons of defined quality indicators should allow for bench marketing and subsequent improvements of care.

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Prevalence of asymptomatic deep vein thrombosis in patients with inflammatory bowel diseases in the ambulatory surgery setting

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Abstract

Introduction: Patients suffering from inflammatory bowel disease (IBD) are reported at higher risk of venous thromboembolism (VTE). This is relevant in IBD patients scheduled for surgery. We aimed to seek for differences in the prevalence of asymptomatic lower extremity deep venous thrombosis (DVT) in IBD patients observed in outpatient surgery setting compared with controls.

Methods: All consecutive patients diagnosed with IBD observed in outpatient setting between December 2013 and June 2014 were prospectively included. A sex, age, and gender matched cohort of non-IBD patients served as control group. All patients underwent clinical examination and ultrasound (US) assessment of their lower extremity venous vascular system performed by a clinician blind to patient diagnosis.

Results: A total of 40 IBD patients and 40 controls agreed to participate. One IBD patient and one control were found with non-occlusive chronic DVT. No differences were observed in valvular incompetence between the two groups. Neither acute DVT nor severe venous incompetence were observed. Surgery was only performed in one control.

Conclusion: Our data show that patients with IBD in remission are not at higher risk of either asymptomatic DVT or venous insufficiency compared with general population, suggesting that the higher risk of VTE events may rely on complex inflammatory mechanisms related with immune response. Screening asymptomatic IBD patients for DVT showed no advantages, suggesting that routine control in ambulatory surgery units is not warranted.

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Introduction

Inflammatory bowel diseases (IBD), including Crohn's disease (CD) and ulcerative colitis (UC), are considered a risk factor for venous thromboembolism (VTE). Despite a retrospective analysis of IBD patients from an US Centre with extensive expertise in the field showed low prevalence of VTE [1], more recent population-based studies recently found that IBD patients have a 3-fold increased risk of VTE compared with general population [2,3]. However, the mechanisms responsible for this pro-thrombotic status in IBD patients is still poorly understood [4].

Venous valvular dysfunctions are a risk factor for VTE, and are observed in up to 83% of patients following deep vein thrombosis (DVT) despite anticoagulant therapy [5,6]. Our aims were 1) to seek for potential differences in the incidence of venous valvular dysfunctions and asymptomatic DVT in IBD patients compared with control patients admitted at our ambulatory surgery unit, and 2) to investigate whether screening asymptomatic IBD patients for DVT in outpatient surgery setting could be advantageous in reducing admission time.

Methods

We prospectively enrolled willing IBD patients consecutively observed in outpatient setting at the Ambulatory Surgery Unit of our Department between December 2013 and June 2014. All patients had received IBD diagnosis following the accepted criteria [7,8]. Patients were considered for inclusion aged between 16 and 65 years, without active disease requiring modification of medical therapy or surgical treatment.

A cohort of age-, sex-, and gender-matched non-IBD controls was established. All patients were screened for prior medical history of VTE, varicose veins and/or lower limb oedema, and underwent a complete physical examination with careful assessment of lower limbs.

Patients received Doppler ultrasound evaluation (US), performed by an ultrasonographer with extensive experience, who was blind to the patient diagnosis. With the patient in supine position, the common, deep, and superficial femoral and popliteal venous segments were evaluated for venous thrombosis with a standard probe. Compressibility/collapse of each venous segment was assessed, and valvular competence was measured. Valve incompetence was graded as normal, mild or severe based on the peak Doppler velocity of the reflux signal.

For the secondary aim, we sought whether US evaluation changed the management of IBD patients compared with controls. Patients accessing the Ambulatory Surgery Unit for control had a Medical Chart opened at the time of US examination, meaning that, should asymptomatic vein disorders be found, a treatment could be proposed and undertaken in shorter times, by avoiding the usual waiting list for outpatient surgical procedures. The number of IBD patients taking advantage from this policy was compared with controls to assess the effectiveness of such prophylactic pathway in reducing waiting time for surgery, and expedite the work of the Unit.

Results

Forty IBD patients fit in the criteria and agreed to study participation. Sixteen had CD, and 24 UC. Median age was 42 (range 17-62) years, with 29 females. Forty matched controls were included, observed for other-than-IBD benign diseases.

Varicose veins were observed in 7 IBD patients (17.5%) and in 12 controls (30%), p=0.29. No signs of post-thrombotic syndrome were observed in any patient.

One patient in each group (2.5%) was found with chronic DVT, while mild valvular incompetence was found in 12 (30%) and 11(27.5%) IBD and controls, respectively (p>0.99) No patients with severe venous incompetence were observed. Patients were prescribed compressive stockings, and surgery was offered when indicated. Only one patient from controls received surgical treatment, whereas IBD patients declined or did not need surgical procedures (p>0.99).

Discussion

In our study, we did not find an increased rate of valvular dysfunction or asymptomatic DVT in IBD patients compared with patients without IBD, although IBD are an independent predictor of VTE. Neither clinical nor Doppler US-detected differences were observed between the two groups. Routine examination did not modify the management of IBD patients in terms of ambulatory surgery procedures.

The reported incidence of VTE in IBD greatly varies among studies, but most population-based big studies agree that these are an independent risk factor of VTE, increasing a three times as high risk compared with general population [2,3].

However, our findings were not completely unattended. The risk of VTE in IBD patients is increased in those with moderately to severely active disease and in-hospital setting [9]. Patients with remitting IBD may not be at higher risk of VTE when compared with those with active flares [10] and needing surgery for refractoriness to therapy.

IBD are complex diseases, involving complex aetiopathogenesis. The mechanisms underlying the development of such diseases include the immune system, a genetic predisposition, and exogenous factors [11–19]. This justifies the frequent association of IBD with the so-called extra-intestinal manifestation (EIMs), IBD-associated disorders occurring in other organs, as well as with malignancies of intestinal [20,21] and extra-intestinal origin [22]. Haematological disorders resulting in a pro-thrombotic status could be regarded as an EIM [4].

IBD patients may have disease onset at any age [23–27], but may require invasive surgery [28–31] irrespective of age, as this is not regarded as a limit for advanced surgical procedures itself [32–46]. Another facet to evaluate is the potential need for combined treatment (medical and surgical) [47–54], or the need of repeated procedures for complications [43,55–62], which may further increase the risk of VTE. This is consistent with complex autoimmune mechanisms playing a role in thrombogenesis in IBD, which may escape the common known pathways.

With these observations in mind, we tried to assess the impact of this preventive pathway in reducing waiting lists for ambulatory procedures in these patients, by recording them with a Medical Chart at the Ambulatory Surgery Unit, where visits and US were performed. A report including 315 and 363 patients operated on in 2011 and 2012, respectively, at a Day Surgery Unit from UK [63] showed that waiting for being operated on and booking mistakes left room for improvement. Ambulatory and Day Surgery waiting lists in some Countries are long, i.e. in Italy, and it can take months before being called for the procedure. This is a relevant point, as Ambulatory Surgery Units were developed specifically to resolve the issue of the long waiting list, simplifying the scheduled work of Surgical Units [64]. Besides problems in communications between caregivers and patients [65], other factors have been investigated, which could account for excessive waiting and surgical lists overrun [66,67].

Faiz et al. [66] showed that overruns of the surgical list are responsible of poor staff morale, and can be reduced by lowering the number of scheduled procedures. However, this does not come without a cost, because of the potential reduced productivity due to inadequately balanced list sizes.

Studies from the same UK based group have shown that statistically designed tools can ease planning the activity of the Ambulatory Units, and increase the performance rates and patient satisfaction [67,68]. The latter observation is much more relevant in IBD patients, who often have psychological repercussions due to their diseases themselves [27]. The proposed approaches [66–68] are useful, but rarely applied in everyday practice of Ambulatory Surgery Units. By admitting patients at the outpatient surgical procedure Unit at the time of prophylactic examination, with no additional waiting list, we were not able to find this approach effective, irrespective of baseline disease. On the contrary, most accesses were avoidable, and only delayed the scheduled activity of the Unit, suggesting that such approach in IBD patients is useless for patients, and detrimental and time consuming for the Hospital.

Notwithstanding, although routinely screening asymptomatic IBD patients for alterations of lower extremities venous valvular system may be inappropriate [10], our paper advocates the need for further researches to identify the factors responsible for higher risk of VTE in IBD patients, allowing prevention of these events especially in those with active disease or candidate to surgery.

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