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The reasons for postponement of scheduled orthopedic surgical operations andits effect on the patients'anxiety and pain levels

Ortopedik cerrahi girişimlerin ertelenme nedenleri ve ertelemenin hastaların anksiyete ve ağrı düzeylerine etkisi

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Amaç: Hastaneye yatırılarak ortopedik cerrahi girişim uygulanması planlanan hastalarda cerrahi girişimlerin ertelenme nedenleri araştırıldı; bu durumun hastaların anksiyete ve ağrı düzeylerine etkisi değerlendirildi.

Çalışma planı: Ortopedi ve Travmatoloji kliniğinde yatırılarak alt ekstemitede cerrahi girişim uygulanan 100 hasta (yaş aralığı 21-56) çalışmaya alındı. Planlanan günde cerrahi işlemin ertelendiği olgulardan (50 hasta) çalışma grubu, ertelenmediği olgulardan (50 hasta) kontrol grubu oluşturuldu. Veriler, bireysel özellikler formu, Spielberger Durumluluk-Süreklilik Anksiyete Ölçeği ve ağrı değerlendirme ölçeği ile toplandı. Her iki grupta da, cerrahi girişimden sonraki ilk 48 saat içinde sekiz saat ara ile altı kez ağrı değerlendirmesi yapıldı. Çalışma ve kontrol gruplarından elde edilen bilgiler karşılaştırıldı.

Sonuçlar: En fazla erteleme nedeni (%28) tıbbi hastalıklar idi. En fazla erteleme kararı (%42) anestezist tarafından verildi. Cerrahi girişimin ertelendiği grupta, erteleme kararı açıklandıktan sonra durumluluk anksiyete puan ortalamasının cerrahi öncesine göre anlamlı derecede yükseldiği görüldü (p=0.001). Ağrı değerlendirmesinde "rahatsız edici ağrı" bildiren hasta sayısı, girişimin ertelendiği grupta har zaman yüksek bulundu. İkinci, üçüncü ve altıncı değerlendirmelerde "rahatsız edici ağrı" tarifleyen hasta sayıları erteleme grubunda anlamlı derecede yüksek idi.

Çıkarımlar: Planlanan cerrahi girişimin ertelenmesi, hastaların daha fazla duygusal travma ve ağrı yaşamalarına neden olmaktadır.

Anahtar sözcükler: Anksiyete, ameliyathane/kullanım; ortopedi/istatistiksel veriler; ağrı; doktor-hasta ilişkileri; anket ve ölçek; elektif cerrahi işlemler.

Objectives: This comparative-descriptive study was planned to evaluate the reasons for postponement of scheduled orthopedic surgical operations and its effect on anxiety and pain levels of patients.

Methods: The study included 100 patients (age range 21 to 56 years) who were admitted to the orthopedics department for a scheduled surgical operation in the lower extremity. Fifty patients who were subject to postponement of the operation on the scheduled day comprised the study group, and 50 patients who underwent surgery on the intended day comprised the controls. Data were collected by means of a patient questionnaire, the Spielberger State and Trait Anxiety scale, and a pain assessment scale. Evaluation of pain was made six times at regular intervals within 48 hours postoperatively. The results were compared.

Results: The most common reason (28%) for postponement was the presence of medical diseases on the part of the patient. Most frequently, the decision for postponement came from anesthesiologists (42%). Compared to the preoperative level, the mean state anxiety score showed a significant increase following the notification of the patients concerning the postponement (p=0.001). The number of patients who reported "disturbing pain" was at all times high in the study group, being significantly more in the second, third, and sixth evaluations.

Conclusion: Postponed surgical operations result in an increased degree of emotional trauma and pain in patients assigned to have orthopedic surgical interventions.

Key words: Anxiety; operating rooms/utilization; orthopedics/statistics & numerical data; pain; physician-patient relations; questionnaires; surgical procedures, elective.

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Surgical intervention is a treatment method, applied when impaired body functions exist as in diseases, injuries and deformities to maintain physiological conditions as much as possible. The aim is reaching near normal physiological functions or providing chance to live within tolerable limits.

Beside the surgical intervention, hospitalization of patient in relation with the treatment and care process is another common application to prepare the patient physiologically and psychologically. However, patients exhibit different degrees of anxiety and pain in such planned surgical interventions where minimizing of possible surgical risks is aimed.

Postponement of scheduled surgical operations because of different reasons just before or on the day of intervention are indeed frequently met conditions and the effect of postponement on patients' anxiety and pain is not known.

Studies about postponement of surgical operations are mostly about the reasons for postponement, distribution among surgical branches and financial results. No data is available about the reasons for postponements of orthopedic operations in relation with patients' condition in period after the postponement.

We aimed to investigate the reasons for postponement of orthopedic operations and the effect on patients' anxiety level and pain intensity in hospitalized subjects.

Patients and methods

Subjects in this study were chosen among the patients with health insurance, hospitalized between the dates April 15 and November 12, 2002 to Istanbul Medical Faculty Hospital of Istanbul University Medical School. All patients were with problems of lower extremities under the care of Department of Orthopedics and Trauma, informed about their previously planned surgical operations 24 hr before the intervention. Total number of patients was 100 and age range was between 21 and 56 yr. the study was approved by the ethical committee of Istanbul University Medical Faculty Hospital. The patients were informed about the study and data collection procedure before the surgical operations. Patients with postponed orthopedic operations on the same day of decisions (n=50) formed the experimental group while others with no postponement (n=50) were assigned as the control group.

The reason for preference of low extremity problems is that such a surgical intervention hinders patients to maintain their daily life and independence however extends the period before people start to work again in cases when patients do so. We used the scale for pain evaluation and the anxiety scale of State-Trait anxiety beside the form for personal characteristics.

The form for personal characteristics: it was consisted of 23 questions, 12 of which were with free end of answer. The content was based on literature search and investigator's knowledge and experience. The questionnaire was filled personally by the patient on the day before the planned surgical intervention.

Anxiety scale of State-Trait: patients' anxiety levels were evaluated by the scale proposed by Spielberger, tested for validity and reliability and lately adapted to Turkish by Öner and Le Copte.

The scale was applied on the day before the surgical intervention for all patients. The patients in experimental group were tested within a few hours after the postponement and later after the operation, with considerably lessened pain and anesthesia effect. The patients in control group were tested on the day after operation by the same foresight.

Verbal Category Scale developed by Melzak and Targerson for definition of pain and widely used for evaluation of acute pain raised after the surgical intervention in our country was used for evaluation of pain. That has also proved superiority on other two dimensional tests. The following grade definitions for pain conditions were used in the test: 1. Light pain 2. uneasy pain 3. Disturbing pain 4. Terrible pain 5. Irrespirable pain. The test was performed 6 times, repeatedly within 8 hours interval in a period of 48 hours after the surgical intervention. Special attention was paid to avoid test application after a painful deed of patient and the test was applied after about 1 hour if a similar condition existed. All patients were asked to indicate the exact definition for their pain.

Patients were injected with intramuscular analgesic (3 per day) and narcotic (50 mg, 2 per day) agents for two days after the surgery as a routine clinical analgesia application.

Statistical analysis was performed by chi-squared and Fisher's exact chi-squared test for nominal variables. Ordinal variables were evaluated by Mann-Whitey U and Wilcoxon tests. Both paired and unpaired Student's t tests were used for analysis of other results and $p<0.05$ was considered as significantly different.

Results

Personal characteristics of patients are summarized and presented in Table 1. There were no differences between the two groups for compared parameters. Surgical intervention type was also not different between the groups ($c^2=1.12$, $p=0.89$; Table 2).

The reasons for postponement of surgical interventions and the origin of information provided to patient are presented in Table 3. The distribution for reason aspect is as follows: %42 anesthesiologists (21 times), %36 surgeons (18 times), %18 head nurse of operating hall (9 times) and %4 patients (2 times).

The average scores for State anxiety and Trait anxiety before the surgical interventions in control group were 45.14±7.66 and 49.04±7.19 respectively

Table 1. Personal characteristics of patient

	Surgical operation						Significance	
	Not postponed		Postponed		*Total*			
	Number	Percent %	Number	Percent %	N	%	x^2	*p*
Sex							0.16	0.68
Male	21	42	23	46	44	44		
Female	29	58	27	54	56	56		
Total	50	100	50	100	100	100		
Age group							0.65	0.72
21-32	14	28	16	32	30	30		
33-44	23	46	19	38	42	42		
45-56	13	26	15	30	28	28		
Total	50	100	50	100	100	100		
Education							3.22	0.35
Primary/secondery	21	42	23	46	44	44		
College	16	32	18	36	34	34		
University	13	26	9	18	22	22		
Total	50	100	50	100	100	100		
Marital status							4.20	0.12
Married	29	58	38	76	67	67		
Single	21	42	12	24	33	33		
Total	50	100	50	100	100	100		
Profession							5.42	0.36
House wife	11	22	17	34	28	28		
Worker	12	24	8	16	20	20		
İndeependent business	7	14	10	20	17	17		
Officer	16	32	12	24	28	28		
Student*	4	8	3	6	7	7		
Total	50	100	50	100	100	100		

* Data were excluded from chi-square analysis (n<5)

Table 2. Surgical operations Performed

	Not postponed		Postponed	
Surgical İntervention	n	%	n	%
Hip prosthesis	15	30	17	34
Femoral head intervention	12	24	12	24
Femoral / Tibial osteotomy	11	22	13	26
Knee prosthesis	7	14	5	10
Hip osteotomy	5	10	3	6

and 42.86±4.51 and 48.30±5.74 in experimental group respectively. The values were not different between the groups.

After the operations the average scores for State anxiety were 39.52±5.53 and 38.12±6.31 in experimental and control groups respectively and the values were not different between the groups. We observed a significant increase in average scores for State anxiety in our experimental group after the explanation for postponement and the values were found as 42.86±4.51 before and 45.26±5.97 after the surgery (t=-3.74, p=0.001).

The distribution of pain intensity among patients is presented in Table 4. Repeatedly performed tests for evaluation of pain revealed that patients who expressed their pain as "disturbing" were exactly higher in number in experimental group. Significant difference in patient number with "disturbing pain" was observed between the two groups for the second, third and sixth pain evaluation tests. No other difference was detected among evaluation scores for pain intensity.

Discussion

Surgical interventions might be postponed by different reasons like hypertension, heart disease, asthma and abnormal laboratory results. We found that surgical operations were postponed because of a disease in 28 % of total patient number (Table 3). Knight has already reported a result as 49 % for the same reason of postponement while Dix and Howell presented data as 16.2 % for hypertension. All those results indicate for an insufficient patient evaluation and preoperative preparation process.

Most of patients in Turkey choose their hospital for medical service in respect of their insurance assortment and financial state. Common bureaucratic procedures which are also accounted for postponement are interrelated with administrative aspects as in the cases for patients committed to Social Insurances Association in our country. In this context we determined that insurance-related problems comprised 20 % of postponement reasons. However Wildner et al. and Knight reported a ratio of 6 % for insurance-related reasons. It is pretty convenient to detect those patients who might have payment indefiniteness of insurance installments and to avoid including them to operative schedules thus minimizing their psychological and physiological disturbance.

Table 3. The reasons for postponement

Postponed Surgical interventions	n	%
Causes of cancellation		
Medical disease	14	28
Insurance problems	10	20
Program/ listing	9	18
Operating room related concerns	6	12
Changes in the surgeon schedule	6	12
Hunger period violation	3	6
Changes in patients' plan	2	4
Total	50	100
Postponement decision explained		
Nurse/ physician	26	52
Nurse	15	30
Physician	8	16
Patient's family	1	2
Patient's opinion about postponement desicion		
Yes/ explanatory enough	27	54
No/ unnetticient explanation	23	46

Reasons for postponement related with operating hall schedule listing and time disability are reported at level as 36 % by Jorgensen et al. and as 21 % by Pollard and Olson. It was also reported that 45 % of patients appeared at the end of operating list had their operations postponed. We found a ratio of 18 % for those reasons (Table 3) while Doğan et al. reported a ratio of 10 % related with time disability. Time disability-originated reasons for postponement of surgical interventions are mostly based on non realistic programming/listing and beside the rising workload it was reported that patients are negatively affected by so. The factors which should be considered during preparation of operation schedule and surgical intervention listing are the status of equip-

ment and team, surgeon's skill, patient number per day and sterilization program.

Postponement reasons arising from operating hall are frequently encountered factors including delay in ensuring tools and sterilization process, insufficient operative staff, communication discrepancies between the surgeon and operative staff. We determined a ratio of 12 % for the above mentioned reasons in our study (Table 3). The precautions to avoid such situations are preliminary information for required equipment and convenient listing procedure

Table 4. Postoperational distribution of pain intensity

Pain scoring	Surgical operation						Significance	
	Not postponed		Postponed		*Total*			
	Number	Percent	Number	Percent	N	%	x^2	*p*
First Evaluation							7.97	0.06+
Light	7	14	5	10	12	12		
uneasy	33	66	22	44	55	55		
Disturbing	8	16	16	32	24	24		
Terrible	2	4	7	14	9	9		
Irrespirable	–	–	–	–	–	–		
Second Evaluation							21.93	0.0001+++
Light	28	56	8	16	36	36		
uneasy	16	32	17	34	33	33		
Disturbing	6	12	24	48	30	30		
Terrible	–	–	–	–	–	–		
Irrespirable	–	–	1*	2	1	1		
Third Evaluation							15.81	0.00++
Light	21	42	9	18	30	30		
uneasy	25	50	21	42	46	46		
Disturbing	4*	8	20	40	24	24		
Terrible	–	–	–	–	–	–		
Irrespirable	–	–	–	–	–	–		
Fourth Evaluation							6.41	0.12+
Light	19	38	10	20	29	29		
uneasy	26	52	27	54	53	53		
Disturbing	4*	8	11	22	15	15		
Terrible	1*	2	2*	4	3	3		
Irrespirable	–	–	–	–	–	–		
Fifth Evaluation							4.31	0.23+
Light	27	54	22	44	49	49		
uneasy	21	42	20	40	41	41		
Disturbing	2	4	7	14	9	9		
Terrible	–	–	1*	2	1	1		
Irrespirable	–	–	–	–	–	–		
Sixth Evaluation							14.68	0.001+++
Light	37	74	19	38	56	56		
uneasy	13	26	27	54	40	40		
Disturbing	–	–	4*	8	4	4		
Terrible	–	–	–	–	–	–		
Irrespirable	–	–	–	–	–	–		

* Data were excluded from chi-square analysis (n<5)

and also a regular communication between the surgeon and staff members.

The precedence of urgent surgical operations, illness of surgery staff members or postponement related with personal problems of surgeon are concerned as planned postponement by physician's decision. We found a ratio of 12 % for planned postponements and further data was provided by Pollard and Olson for postponement by physician's decision as 16 % while involvement of urgent cases in postponement was reported as 14 % by Asserud et al. Jorgensen et al and Koppada et al have also shown similar results claiming that most of postponements depend on physician's plan to put in precedence the urgent cases. We consider that probable discomfort could be prevented by informing the patients or their families that plan changes led to postponement.

It is also known that insufficient preliminary patient-related preparation could provoke a postponement of surgical operation. We observed that 6 % of our patients had their operations postponed by violation of starvation period which resulted from inadequate information about the issue while a ratio of 14 % was reported by Pollard and Olson for the same reason of postponement. Favourable preliminary preparation process and adequate informative applications are expected to be completed while program listing is prepared months ago with orthopedic patients and they are processed in order of their reference to the clinic.

Different reasons originated from patient lead to postponement of surgical interventions and physical or social problems are involved. 4 % of patients in our study postponed their operations on their own. Different values as 14.6 %, and 14 % were reported for this reason of postponement by Morrissey et al. and others respectively. Patient's decision for postponement shares a ratio between 4 and 14 %. It is an ordinary state in aspect of patient's rights. But if an insufficient psychological preparation of patient induces the decision for postponement then responsibility of medical service team comes out. The above mentioned decisions cause sudden alteration in work schedule of operating hall which might negatively affect both patients and the staff. The necessity of surgical operation should be apparently explained to patient by allowing questioning for further information. Patients should also be informed that their decisions will be respected in a case of postponement by patient's desire.

Patients are told about postponement decision by nurses, physicians or their own families. The way of expression of decision and the person who does it are important in aspect of raised anxiety in patients. The appropriate way to clarify the decision for postponement in a reasonable manner requires explanation by physician during a conversation which also allows patient to express her/himself.

More than half of patients in our study (54 %) reported for an adequate information related with their postponement decision while 46 % expressed thought for insufficient information. Bölükbaş et al. noticed for insufficient information about the surgical procedure for both pre- and postoperative periods in ratios as 31 % and 14 % respectively and it was also determined that 95 % of patients requested information about the interventions during both periods. Appreciation of patients' expectations and realizing them as much as possible affect patients' and their families' opinion for satisfaction related with staff and medical association.

Knight reported that postponement decision was usually given by anesthesiologists however Hodge suggested that operation management was the mean reason for postponement. We noticed that the most frequent decision ratio belongs (%42) to the anesthesiologists in our study. When we consider that postponement is based on medical disease in significant manner (%28) it is expected that postponement decision could belong to anesthesiologist by the way to abstain the probable risk of surgical intervention.

Continuous anxiety condition that represents the patient's condition independent expression could attect state-dependent anxiety. So that we evaluated anxiety levels in all patients but we did not find a significant difference between the average anxiety scores of patients in postponed and not postponed groups. Bekaroğlu at al. reported a middle level of continuous anxiety. Those results are consistent with ours and scores between 40 and 49 reported in literature was representing middle level anxiety.

State anxiety appears in certain conditions. In this context we determined a moderate level of in State anxiety in both groups of our patients before their surgical interventions. Bekaroglu et al. have

also reported similar results for the average levels of State anxiety scores for the preoperative period. The waiting period before the surgical intervention is one of the most important reasons for anxiety in patients. Available literature emphasizes that informative interview given by the health care team is quite effective in reducing the anxiety and necessity for analgesic intake and that also accelerates the healing process, shortens the duration of stay in hospital and provides an earlier back to active life.

The levels of State anxiety in both of our groups were found to be very similar in postoperative period. However when the anxiety scores for preoperative period are considered a greater decrease is observed in group without postponement. This finding implies that patients with postponed surgical intervention have higher anxiety scores in postoperative period. We also observed a clear difference between the anxiety scores for pre and postoperative periods in group with postponed surgical interventions. Based on all data obtained, it is apparent that the postponement increases the anxiety levels and indicates for the necessity to reduce postponement as much as possible.

Moderate and high levels of pain exist in most surgery patients in postoperative period. It was reported that 30 % of patients expressed moderate and 40 % expressed severe pain in independent manner of type of surgical intervention. We have also presented different levels of pain in our patients. It is known that anxiety might increase level of pain via muscle tension. In this context, although the absence of a significant difference between our two groups for the first pain evaluation the number of patients who expressed severe pain were higher in the group with postponement. The results were similar for the second pain evaluation. Considering the also higher State anxiety in group with postponement and the fact that anesthesia is over in this period, the severe pain is an expected situation. More severe pain expressions were also determined in the group with postponement during the third evaluation while the consecutive fourth and fifth evaluations for pain levels did not differ between the groups. Severe pain complaints in patients from postponement group were also observed during the last, sixth pain evaluation process, performed 48 hours after the surgical intervention. In conclusion it is possible to be said that postponement leads to more severe pain in patients although a similar study does not exist in literature.

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