Published in final edited form as:

J Vasc Interv Radiol. 2010 July ; 21(7): 1011–1017. doi:10.1016/j.jvir.2010.03.012.

Uterine Artery Embolization vs. Abdominal Myomectomy: A Long-term Clinical Outcome Comparison

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Abstract

Purpose: To assess long-term clinical efficacy of uterine artery embolization compared to abdominal myomectomy.

Materials and Methods—Consecutive women who received either uterine artery embolization or abdominal myomectomy for symptomatic uterine leiomyomata between 2000 and 2002 at a single institution were enrolled. We include patients whose procedures were performed 5 years prior to the study. Symptom evaluations using symptom severity scores, pregnancy rates and satisfaction of the procedures were obtained by IRB-approved questionnaires. Chart reviews were performed to supplement analyses.

Results—The retrospective cohort included 185 patients, including 87 uterine artery embolization patients (47.0%) and 98 abdominal myomectomy patients (53.0%). Eighty nine patients (48.1%) completed the long-term follow-up, of whom 48 had uterine artery embolization and 41 had abdominal myomectomy. Follow up ranged from 50 to 83 months.

A higher but not statistically significant number of patients received repeat interventions after abdominal myomectomy (14%) than uterine artery embolization (8%) ($p=0.204$). Statistically significantly higher symptom severity score improvement in patients with uterine artery embolization than abdominal myomectomy was seen (34 vs 31, $p = 0.02$). Uterine artery embolization patients were less likely to attempt to get pregnant ($p = 0.02$), however those who did had a 66.7% success rate compared with 58.8% for abdominal myomectomy patients. Similar numbers of patients with uterine artery embolization were satisfied ($p=0.57$), reported effectiveness in relieving symptoms ($p=0.43$), and would recommend the procedure ($p=0.37$) compared with abdominal myomectomy patients.

Conclusion—Uterine artery embolization results in long-term clinical success with outcomes comparable or superior to abdominal myomectomy.

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Introduction

Uterine fibroids are the most common reproductive tract tumor in females with increasing prevalence with age, noted in as many as 33 percent of women between 40 to 60 years old. (1)(14) Uterine fibroids are associated with symptoms of menorrhagia, pelvic pain, as well as infertility. In one case control study comparing patients with and without uterine fibroids, patients with uterine fibroids incurred approximately \$12,000 per year more in direct and indirect medical expenditures.(2)

Traditionally, definitive therapy for management of symptoms associated with uterine fibroids has been hysterectomy. Uterine fibroids are the leading indication for hysterectomies. (3)

However, for women of reproductive age who are interested in having children, the need for alternative therapies that preserve fertility exists, and procedures have been developed to manage fibroid symptoms while preserving fertility. Abdominal myomectomy and more recently, uterine artery embolization have emerged as alternative surgical and percutaneous therapies for symptomatic uterine fibroids.

Comparing the two fertility-sparing treatments, recent randomized controlled trial evidence from Mara et al suggest that uterine artery embolization is associated with comparable improvements in patient symptoms compared with abdominal myomectomy.(4) However in this study and several others, follow-up of patients was short term, ranging from 1-2 years after procedure. Very few studies compare long term outcomes between patients who received uterine artery embolization vs myomectomy and those that do are limited by small sample sizes ((4,8-12)).

The purpose of our study is to compare long term outcomes in patients who received uterine artery embolization versus myomectomy using self-reported patient symptoms and the number of repeat interventions after the initial procedure.

Materials and Methods

Study Design

We conducted a single center cohort study of 247 patients who received uterine artery embolizations or abdominal myomectomies between 2000 and 2002 at a large tertiary care hospital. Sixty two patients did not have current mailing addresses in the electronic medical records. The remaining 185 patients (74.9%) with available contact information, of which eighty seven (47.0%) received uterine artery embolizations while ninety eight (53.0%) had abdominal myomectomies, were mailed questionnaires in February 2007. IRB approval was obtained for the questionnaire, prospective patient survey study and retrospective review of patient charts.

Independent Variables – Treatments Received

The independent variable was the type of treatment each patient received. Technique for uterine artery embolizations was described by Kim et. al previously (15). Patients who received uterine artery embolizations underwent an initial flush aortogram. Then the patients received a selective uterine arteriogram with a 3 French microcatheter with power injection (3 cc/second) for 3 or 4 seconds. This was followed by uterine artery embolization with 500-700, 700-900 or 900-1100 Pm polyvinyl alcohol particles (Contour; Target Medi-Tech, Cork, Ireland)or trisacryl gelatin microspheres (Embosphere; BioSphere Medical, Rockland, MA). The endpoint of embolization with polyvinyl alcohol particles was occlusion of the perileiomyoma plexus with stasis or near-stasis of flow in the main uterine artery. The endpoints of embolization with microspheres were occlusion of the perileiomyoma plexus of known

leiomyomata, stasis of flow in the distal part of the uterine artery, and reduced flow in the proximal part of the main uterine artery.

Only 1 myomectomy was performed laparoscopically during this time period, hence laparoscopic myomectomies were excluded from the dataset. A group of gynecologists from a single academic institution performed open abdominal myomectomies on patients with a range of 1 to 30 fibroids at presentation. Open myomectomies were performed using standard techniques described previously (16). Because a total of 24 gynecologists performed the open myomectomies, we performed sensitivity analyses to determine if the study results were driven by outliers. After visually inspecting outcome data by surgeon, we excluded outliers from the analysis to determine if inferences change with the exclusion of those potential outliers. Finally, we grouped the surgeons into tertiles of myomectomies performed to determine if volume of procedures influenced the results.

Dependent Variables – Outcomes from Survey and Chart Review

Survey Outcomes—Symptoms were quantitatively assessed with the symptom severity score questionnaire, which has been validated (17) for its effectiveness in symptomatic uterine leiomyomata. The questionnaire consists of questions asking patients if they have had any gynecologic procedures after the initial uterine artery embolization or myomectomy, whether or not they have tried to get pregnant and if their attempts were successful, if they are menstruating each month, who referred them to the procedure, how satisfied they are with the procedure, if they would recommend the treatment to a friend, and how effective the treatment was in eliminating their symptoms. If patients indicated that they had a gynecologic procedure, they were asked if they got a dilatation and curettage (D/C), hysterectomy, myomectomy or repeat uterine artery embolization.

Additionally, patients were asked to rate their level of distress on a 1-5 scale (“Not at All”, “Slightly”, “Somewhat”, “A Great Deal”, and “A Very Great Deal”) regarding eight questions on symptoms of bleeding, menstrual periods, pelvic tightness or pressure, urination symptoms and feelings of fatigue before the procedure and then after the procedure. The points for each of the questions were added up to create a summary score asking the patients to describe their symptoms prior to the procedure and after the procedure. The summary score was transformed to a 100 point scale. Non-respondents to the survey were classified as missing.

Chart Review Outcomes—Chart reviews were performed to supplement the analysis to determine which patients had additional gynecologic procedures after the initial uterine artery embolization or myomectomy. Additional gynecologic procedures included dilation and curettages, hysterectomies, myomectomies or uterine artery embolizations after the initial procedure. In addition, chart review was used to determine the number of units of blood used to transfuse patients during or after the procedures. Finally, the number of hospital days was determined for the admission during which the initial procedure took place.

Potential Confounders

Risk factors for fibroids were determined by a review of the literature (1) and included family history of fibroids, obesity (BMI>30), history of smoking, and medication usage (oral contraceptives or estrogen containing compounds, age, and race (African American or other). This information was ascertained by chart review.

Indications for uterine artery embolization (menorrhagia or infertility) may also be associated with receiving uterine artery embolization (exposure) and may also be associated with the outcome (additional gynecologic interventions or worsening symptoms), hence these indications may serve as potential confounders.

Statistical Methods

For the self reported outcomes (yes or no) of gynecologic procedures, pregnancy attempts, patient satisfaction, willingness to recommend procedure, and effectiveness of procedure, logistic regression was used to compare outcomes between patients with uterine artery embolization and abdominal myomectomy. Change in symptom severity scores were compared between uterine artery embolization and myomectomy using linear regression. Logistic regression models were used to determine the odds ratio (OR) of the outcomes with 95% confidence intervals and were computed with and without adjustment for risk factors for uterine fibroids (age, race, family history, obesity, smoking, parity, and medication usage). Bivariate analysis was performed to identify confounders in which each of the risk factors were tested against each of the independent and dependent variables. Variables were included in the model if they reached a statistical significance level of 0.2. 3 models were constructed – an unadjusted model, a fully adjusted model with all of the risk factors and a model adjusted for the confounders that were identified in the bivariate analysis.

Missing data were analyzed by determining the mechanism by which data were missing – missing completely at random (MCAR), missing at random (MAR) given other covariates, or not missing at random (NMAR).(5) Particularly for MAR data, recent reviews suggest that performing analyses in which only cases with complete data are analyzed produces biased associations and that performing multiple imputation analyses using statistical software such as SAS, STATA or R produces associations which are less biased. (6)

First missingness (yes or no) was analyzed with respect to other covariates to determine if missing data was dependent on other variables in our dataset. If missingness was dependent on any of the covariates, then multiple imputation analysis was performed using all of the available covariates. Statistical analyses were performed using an algorithm for performing multiple imputation analyses in STATA 10.0 (Statacorp: College Station, TX).(7) Multiple imputation analyses were performed to model missing data using the covariates from the chart review as well as the patient satisfaction survey.

Sensitivity Analyses

A major limitation of any retrospective study is the ability to control for known and unknown confounders. Absent randomization, a number of statistical methods such as propensity scores have been developed to simulate the process of randomization (19,20). As a sensitivity analysis, we modeled the probability of obtaining uterine artery embolization using covariates that have been found to be associated with obtaining uterine artery embolization and included this propensity score as a covariate in our linear and logistic regression models.

Results

Response Rate and Patient Characteristics

The baseline demographics and risk factors for the patients in our cohort from chart review are shown in (Table 1). Those patients who had available contact information (n = 185) for the questionnaire did not differ from those who did not have available contact information (n = 62) in terms of race, age, family history of fibroids, obesity status, medication usage (oral contraceptives or estrogen containing compounds), smoking status and subsequent procedures ($p \geq 0.05$). However, statistically significant differences were noted in age and medication usage, with uterine artery embolization patients being older and less likely to have a history of medication usage. For myomectomy patients, mean age was 37.4 (interquartile range 34 to 41), while uterine artery embolization patients had a mean age of 43.6 (interquartile range 38 - 48). The percentage of African American patients was comparable for myomectomy versus

uterine artery embolization groups (43.9 vs 33.3%, $p = 0.31$). Follow up time was greater than 5 years and similar for both groups.

Missingness

Overall, 41 of the 98 who received abdominal myomectomies responded to the survey (41.8%) compared with 48 out of the 87 patients who received uterine artery embolizations (55.2%), a difference which was borderline statistically significant ($p = 0.07$) (Table 2). African American patients had lower response rates to the survey than non-African American patients (60.9 vs 43.9%, $p = 0.02$). Using chart review to determine who had additional gynecologic procedures after the initial procedure, we noted that there were no statistically significant differences in response rates between the groups who had procedures afterwards compared with those who did not have subsequent procedures. However, we noted that those who stayed longer than 1 day in the hospital and those who required transfusions were more likely to not respond to the survey (58.4 vs 44.1%, $p = 0.05$ and 80.0 vs 49.4%, $p = 0.02$, respectively). Overall, these analyses suggested that the missingness of the data is not completely random – Patients who were African American, hospitalized longer than 1 day, or required transfusion tended to respond to the survey less often. Hence multiple imputation analyses were performed, with assumption that the data is missing at random (MAR).

Outcomes

Survey Outcomes—Comparing pre and post symptom severity scores (Figure 1), patients who received uterine artery embolizations started off with worse symptoms (48.6, 95% CI - 40.7, 56.4) compared with those who received myomectomies (53.6, 95% CI - 44.9, 62.4). After treatment, uterine artery embolization patients reported fewer symptoms (15.0, 95% CI - 9.2, 20.7) than those who received myomectomies (22.6, 95% CI - 14.4, 30.7). Patients with uterine artery embolization reported greater improvements in symptoms after their procedures compared with those who received abdominal myomectomies, although there was substantial overlap in the distribution of symptom differences (Figure 2). Uterine artery embolization was associated with greater symptom improvements after adjusting for pre-procedure bleeding (3.82, 95% CI - 0.59, 7.05), attempts to get pregnant (5.47, 95% CI - 0.64, 10.31) and after excluding outliers (5.41, 95% CI - 0.50, 10.33).

Looking at specific symptoms, statistically significant improvements in heavy bleeding (0.98, 95% CI - 0.26, 1.71), passing blood clots (1.04, 95% CI - 0.37, 1.73), fluctuations in the duration of menstrual periods (1.17, 95% CI - 0.52, 1.81), fluctuation in the length of menstrual periods (1.17, 95% CI - 0.49, 1.85), and feelings of fatigue (0.82, 95% CI - 0.17, 1.47) were noted. Symptoms of tightness or pressure in the pelvic area (0.55, 95% CI - -0.14, 1.25), frequent urination during daytime hours (0.20, 95% CI - -0.49, 0.89) and frequent night time urination (0.25, 95% CI - -0.36, 0.87) were not statistically significantly improved.

Using our bivariate analysis, we identified risk factors that were associated with the independent or dependent variables and found that race, age and family history of fibroids were associated with the dependent and/or independent variables. In our analysis, we tested unadjusted models, models with all of the risk factors, and models adjusting for only race, age and family history (only unadjusted and fully adjusted shown).

The results of the conventional analysis (without imputation), and multiple imputation analysis for the responses to the questionnaires is provided in Table 3, along with the results of the conventional analysis from the chart review. Overall, we noted that more respondents who got myomectomies reported gynecologic procedures after the initial procedure (OR 0.43, 95% CI - 0.19, 1.01), while more myomectomy patients tried to get pregnant (OR 0.24, 95% CI - 0.07, 0.81). Both groups reported high levels of satisfaction with their procedures (OR 1.36, 95%

CI - 0.47, 3.96), their effectiveness in relieving symptoms (OR 1.45, 95% CI - 0.58, 3.63), and were highly likely to recommend the procedure that they received to others (OR 1.60, 95% CI - 0.58, 4.44). These associations were consistent even after we adjusted for pre-procedure bleeding (OR 0.41, 95% CI - 0.09, 1.80). After exclusion of the surgeon with the highest number of gynecologic procedures after the initial myomectomy, we noted greater numbers of myomectomy patients trying to get pregnant (OR 0.15, 95% CI - 0.05, 0.43), comparable levels of satisfaction with both of these procedures (OR 1.33, 95% CI - 0.43, 4.13), comparable effectiveness in relieving symptoms (OR 1.38, 95% CI - 0.54, 3.52), and a comparable willingness to recommend the procedure to others (OR 1.63, 95% CI - 0.60, 4.50).

Chart Review Outcomes—Using a chart review, we determined if the patients required any additional obstetric procedures. We noted that myomectomy patients had higher numbers of procedures compared with uterine artery embolization patients, although this difference was not statistically significant (OR 0.97, 95% CI - 0.27, 3.52). Patients who had myomectomies tended to have longer hospital stays (OR 0.0036, 95% CI - 0.0003, 0.0377) and required transfusions more often (OR 0.049, 95% CI - 0.006, 0.420) than patients who had uterine artery embolizations. We noted that uterine artery embolization was associated with comparable numbers of additional obstetric procedures after adjusting for pre-procedure bleeding (OR 0.41, 95% CI - 0.09, 1.80) and attempts to get pregnant (OR 0.63, 95% CI 0.22, 1.88). After exclusion of the surgeon with the highest number of gynecologic procedures after the initial myomectomy, we noted comparable numbers of procedures after the initial procedure (OR 1.20, 95% CI 0.44, 3.22),

Discussion

Our study provides evidence that uterine artery embolization patients are more likely to report greater improvements in symptoms, fewer complications and less additional interventions than myomectomy patients, while myomectomy patients are more likely to attempt to get pregnant. Furthermore, these improvements in symptoms persisted over long term follow up for patients in both treatment groups

Our results are consistent with prior studies comparing uterine artery embolization with myomectomy ((4,8-12)). Only one of the studies comparing the two interventions allocates the interventions randomly (4), whereas most employed prospective or retrospective cohort study designs using questionnaires and chart reviews to study outcomes. These studies had a range of sample sizes for uterine artery embolization patients (32 – 149 patients) and myomectomy patients (16 – 69 patients) and follow up times from less than one month to approximately 4 years. Our study compares favorably with these studies with a sample of size of 87 patients getting uterine artery embolization and 98 patients getting myomectomy and mean follow up times of greater than 5 years. Like many of the other studies though, our study involves a non-randomized comparison between the two treatments, which limits our ability to minimize confounding in our study, aside from statistical adjustment for potential confounders.

Using the questionnaires, these studies estimated quality of life scores to assess changes in patient symptoms over time and report substantial improvements in patient symptoms in both groups. Uterine artery embolization patients reported greater symptom improvements than myomectomy patients in all of the studies, although the differences in symptom improvements did not achieve statistical significance. Consistent with the literature, our study found substantial improvements in symptoms in both groups, however uterine artery embolization patients reported greater improvements in symptoms compared with myomectomy patients before and after adjustment for risk factors associated with fibroids. Given our follow up times, these results suggest that the improvements in patient symptoms after uterine artery embolization or myomectomy persist over long term follow up.

Substantial variation exists in the percentages of re-interventions, particularly for those who received uterine artery embolization (uterine artery embolization – 2.0 – 32.8%, myomectomy – 3.0% - 10%). In the study with the highest percentage of re-interventions, Mara et al found that only 6.9% of the uterine artery embolization patients received re-interventions specifically for recurrence/lack of control of fibroids vs. 3.2% for myomectomy patients. The authors attributed the higher rates of re-intervention to differences in indications for re-intervention and therapeutic goals, rather than technical failures or fibroid recurrence rates. Similarly Broder et al suggested their high re-intervention rates (29.0%) might be related to the lack of consistency in clinical practice and knowledge about situations in which additional interventions should be performed status post uterine artery embolization (8). Although our study reported a re-intervention percentage for uterine artery embolization patients (8.3%) comparable with the literature, our myomectomy re-intervention rate was higher (14.6%) than others in the literature.

This may be related to our longer follow up times or in differences in clinical practice for re-interventions in patients who have received abdominal myomectomies.

Wide variation in adverse event rates are reported in the literature. This relates to the definitions of adverse event rates, as relatively minor complications such as fever and nausea reported in most studies were included as adverse events and major complications such as bowel lacerations occurred rarely. In our study, we noted that myomectomy patients required more blood transfusions and had longer hospital stays compared with uterine artery embolization patients, consistent with the higher adverse event rates in myomectomy patients reported in the literature.

Finally, in terms of pregnancy outcomes, most of studies have reported that uterine artery embolization patients attempt to get pregnant less often than myomectomy patients and when they do attempt to get pregnant, they have lower percentages of successful deliveries than myomectomy patients. In our study we also found that fewer numbers of uterine artery embolization patients attempted to get pregnant. Goldberg et al compiled data from the literature on 53 pregnancies after uterine artery embolization and 139 pregnancies after myomectomy and found that uterine artery embolization was associated with higher risks for preterm delivery and malpresentation (13). However they noted that uterine artery embolization patients were older than myomectomy patients, so these results might be confounded by age. These results might also be influenced by the fewer numbers of patients who attempted to get pregnant after uterine artery embolization as well as publication biases in reporting pregnancy related outcomes in the literature.

Finally, given the non randomized nature of the comparisons, it is possible that selection biases could account for the differences. In the one randomized comparison, Mara et al noted that 40/63 women (63.5%) who received myomectomy and 26/58 (44.8%) women who received uterine artery embolization attempted to conceive, and uterine artery embolization was associated with fewer deliveries and more abortions. Given the smaller percentage of uterine artery embolization patients who attempted to conceive, it is possible that selection biases may account for these results, as patients who wished to conceive after the procedure may have been more likely to be referred to abdominal myomectomy. These results may also have been influenced by the age distributions of uterine artery embolization and myomectomy patients in which only 75% of uterine artery embolization patients are greater than 38 years old and 75% of myomectomy patients are greater than 34 years old. Although normal deliveries have been reported after uterine artery embolization, uncertainty about fertility after uterine artery embolization has led to recent SIR guidelines that suggest that uterine artery embolization is a relative contraindication for patients who wish to retain their fertility but may also represent the preferred alternative to patients who are not able to get myomectomies (18).

Strengths of our approach include long term follow up and multiple imputation analysis to account for low response rates. To supplement our analyses, we also performed a retrospective chart review to determine procedure rates after the initial procedure to confirm the results of our survey and to determine if our study results were biased due to missing results. Finally our sample size was one of the larger sample sizes in the literature.

Limitations of our study include non-random allocation of treatments, high non-response rates, and lack of detailed information on obstetrical outcomes. We attempted to minimize the biases associated with high non-response rates by conducting a multiple imputation analysis and by conducting a chart review. We also conducted a conventional analysis that employed conventional procedures in which cases that had missing data for each particular question were excluded from the analysis. Results from the multiple imputation analysis as well as the conventional analysis were comparable.

In addition, our study asked study participants to rate their pre-intervention symptoms several years after the intervention, which may lead to an over or underestimation of the pre intervention symptom severity. Although the magnitude of symptom changes might be over or underestimated, we hypothesize that patients who are happy with the outcomes of their procedure will report improvements in patient symptoms and vice versa. In addition, the improvements noted in our study are consistent with improvements in patient symptoms from prior studies with shorter follow up times, which strengthens the confidence in our findings.

In conclusion, compared with abdominal myomectomy, uterine artery embolization is associated with shorter hospital stays, fewer transfusions and comparable improvements in patient symptoms, which persist on long term follow up.

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Figure 1. Pre- and postprocedural symptom severity scores in patients treated with myomectomy or UAE.

Figure 2.
Distribution of symptom differences in patients treated with myomectomy or UAE.

Table 1

Patient Characteristics at Baseline

Characteristic	Myomectomy n = 98	Uterine Artery Embolization n = 87	p value
African American (%)	43.9	33.3	0.306
Family History of Fibroids (%)	12.2	8.3	0.547
Obese (%)	33.3	30.8	0.831
Medication Usage (%)	63.4	29.2	0.001
Smoking History (%)	26.3	16.1	0.308
Age mean (SD)	37.7 (5.8)	42.9 (7.8)	<0.001
Parity mean (SD)	0.4 (.6)	0.8 (.9)	0.029
Follow up time (years)	5.3	5.5	0.420

Table 2

Percentage of Questionnaire Nonrespondents by Patient Characteristic

Characteristic	N	%	p value
Uterine Artery Embolization	87	44.8	0.07
Abdominal Myomectomy	98	58.2	
Non-African American	98	43.9	0.02
African American	87	60.9	
Positive Family History	16	43.8	0.50
Negative Family History	169	52.7	
Obese	40	50.0	0.77
Nonobese	145	52.8	
Medication Usage	77	48.1	0.38
No Medication Usage	108	54.6	
Smoker	29	48.3	0.62
Non-Smoker	156	53.5	
Had Procedure Afterwards	25	60.0	0.38
Did Not Have Procedure	160	50.6	
Hospital Stay Longer than 1 Day	101	58.4	0.05
Hospital Stay of 1 Day	84	44.1	
Required Transfusion	15	80.0	0.023
Did Not Require Transfusion	170	49.4	
Greater than Age 35	140	52.1	0.90
Less than or Equal to Age 35	45	51.1	
Ever Pregnant?	17	49.0	0.41
Never Pregnant	168	55.1	

Table 3

Associations of Uterine Artery Embolization vs Abdominal Myomectomy with Outcomes Obtained from Questionnaire and Chart Review

Outcomes	Conventional Analysis				Multiple Imputation	
	Unadjusted OR Uterine Artery Embolization vs Myomectomy	p value	Adjusted OR Uterine Artery Embolization vs Myomectomy	p value	Unadjusted OR Uterine Artery Embolization vs Myomectomy	Adjusted OR Uterine Artery Embolization vs Myomectomy
Questionnaire	n				n	p value
GYN Surgery After Initial Procedure	90	0.52 (0.21, 1.29)	0.16	0.73 (0.18, 3.04)	0.67	0.50 (0.21, 1.18)
Tried to Get Pregnant	89	0.27 (0.10, 0.73)	0.01	0.10 (0.01, 0.95)	0.05	0.23 (0.10, 0.55)
Satisfied with Procedure	89	0.93 (0.23, 3.72)	0.92	1.90 (0.16, 22.10)	0.61	1.21 (0.38, 3.81)
Would Recommend Procedure to Others	89	1.89 (0.49, 7.21)	0.35	3.70 (0.29, 47.4)	0.31	1.71 (0.63, 4.60)
Procedure Effective in Relieving Symptoms	89	1.19 (0.32, 4.45)	0.79	1.39 (0.10, 19.20)	0.80	1.44 (0.50, 4.14)
Chart Review	n					p value
Hospital Days	185	0.01(0.00, 0.03)	0.000	0.0036 (0.0003, 0.0377)	0.000	
Transfusions	185	0.064 (0.01, 0.50)	0.009	0.049 (0.006, 0.420)	0.006	
Procedures After Initial Procedure	185	1.046 (0.45, 2.43)	0.917	0.97 (0.27, 3.52)	0.959	