DISCUSSION

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Stress urinary incontinence is the primary type of urinary incontinence (UI) reported among younger women, with approximately 50% of urinary incontinence being stress.[46]In addition to the high prevalence rate of UI especially in women, it is considered as an important social health problem that affects daily activities and quality of life.[47–49] This problem affects the physical, mental, and sexual aspects of a person and causes deprivation of social status and decreases quality of life and self confidence.[50,51] In addition, it produces serious economic and psychological problems with feelings of helplessness, depression, and anxiety.[52,53]

Thus, the current study was formulated to reveal the impact of Rolled Fortified Vaginal Flap (RFVF) operation on the treatment of patients with stress urinary incontinence (SUI) due to ISD regarding technical feasibility, complications, outcome, and reveal its impact on the quality of life of women suffering from stress urinary incontinence. To achieve these aims the prospective study design was utilized. Twenty women suffering from stress urinary incontinence due to intrinsic sphincter deficiency were included in this study.

Regarding etiological causes for the development of ISD the first risk factor was obstetric history of the patients; all of our studied women had undergone at least 1 vaginal delivery with a mean gravidity of 3.80 ± 1.82 and a mean parity of 2.85 ± 1.137. All of the studied women had at least one normal delivery. A study by Kim et al.[54] Found no positive correlation between pregnancy and ISD. Also, Pajoncini et al.[8] Reported that the number of vaginal deliveries did not appear to be correlated to ISD.

Another correlation was that one of our patients developed SUI post hysterectomy which supports the integral theory of SUI. Another patient has undergone a prior anti-incontinent surgery using tape which denotes the possible recurrence of incontinence in ISD patients post surgery. However, these assumptions can't be made based on the small sample size. Betson et al [55] found that women who had undergone previous hysterectomy or pelvic surgery may have an impact on urethral function due to the de-nervation and de-vascularzation of the urethra after extensive urethral dissection.[55] Richter at al.[56] Stated that women who had underwent prior UI surgery had an increased odds of overall failure of approximately two times that of women who had no prior UI surgery controlling for other factors. The effect of prior UI surgery has also been described by several other authors, they attributed this to scarring, nerve damage during periurethral dissection or more severe neuromuscular damage.[57–59]

The success rate in our series was 90% based on our definition of clinical success of dry women at 6 months follow up with no major complications at the 6 months follow up period. The complications encountered in our study were immediately post operative and they were all of mild severity and transient duration. The 90% success rate coincided with the cough stress test and the urodynamic findings. The ICIQ-UI-SF score showed a significant improvement from a mean percent score of 73.57 + 12.1% preoperatively to 2.62 + 8.1% at 6 months follow up. In our previous group of patients with ISD[40] the success rate was 80% with no major complications. The overall success rate is 86.67%.

The definitions used to describe bladder outlet obstruction (BOO) in men differ greatly from those used in women. This is attributed to the etiological causes in women that vary greatly from anatomic (pelvic prolapse, pelvic masses, iatrogenic obstruction after stress incontinence) to functional (dysfunctional voiding, primary bladder neck obstruction) without one predominant diagnosis. Thus, the normograms used in men can't be effectively used in women.[60]

In a study by Defreitas et al.[61] a trial was made to calculate the variables of BOO in females and they concluded that a Qmax <12ml/sec and PdetQmax >25cmH_2O defined obstruction. They also found that each individual parameter, if abnormal, was suggestive of obstruction, even if the other parameter was normal.

In the year 2000, Blaivas and Groutz[44] created a nomogram. They defined BOO as a free Qmax < 12 mL/sec combined with a PdetQmax of > 20 cm H_2O in pressure-flow study, or obvious radiographic obstruction in the presence of a sustained detrusor contraction of > 20 cm H_2O, or urinary retention or the inability to void with a transurethral catheter in place despite a sustained detrusor contraction of > 20 cm H_2O. Citing the difficulty in performing uroflowmetry in women with a catheter in place, and the fact that there was a significantly higher flow rate in the same woman without a catheter, they chose to use a noninvasive flow rate in their nomogram. Also, because they found no statistical difference in PdetQmax in obstructed versus unobstructed patients, they chose Pdet. Max as the pressure parameter. Moreover, PdetQmax cannot be plotted in cases of urinary retention because there is no measurable flow, whereas pdet.max during an attempt to void enables analysis of these obstructed patients as well. Using cluster analysis to classify patients with different grades of obstruction, they formulated the 4-zone nomogram.[44]

Although pressure-flow analysis for BOO in women is not yet as standardized as it is in men, the concept of relatively high pressure and relatively low flow when compared to normal as a measure of obstruction prevails.[61] Referring to the above discussed reasons we used the bladder outlet obstruction nomogram for women by Blaivas and Groutz[44] in our study at 1 and 6 months follow up.

The mean maximum flow rate of urine slightly decreased from 22.2 $\pm$ 3.5 ml/s at 1 month to 21.6 $\pm$ 3.4 ml/s at 6 months however, this decrease was neither clinically nor statistically significant, P = 0.15.

This study shows that overall, the quality of life (QoL) of women with urinary incontinence significantly improved following Rolled Fortified Vaginal Flap (RFVF) operative interference. Exactly 85% of women suffered from leakage of urine at least once a day at their first presentation before surgery. One month after operative interference, the majority (90%) did not report any leakage of urine while just only 10% reported urinary leakage about once or less per week with similar results at 6 months follow up. The current results confirm previous results demonstrating improvement of quality of life following surgical interference for women suffering from stress urinary incontinence. A study using mid-urethral sling surgery revealed that about 80% of women showed improvement of quality of life following surgery after 6 months of surgery. The authors confirmed that this improvement was sustained for at least 2 years.[62] Our results were superior to other studies assessing the outcome of TVT on QoL of women post operatively.[63,64]

According to the nomogram, 20% of our patients had mild obstruction at 1 month. This decreased to 10% at 6 months; the technique also resulted in transient retention in 5 patients in the immediate follow up period. The technique is slightly obstructive and it is comparable to that of the pubovaginal sling [65,66] but more obstructive than that of the TVT.[67,68]

All women included in this study reported interference with their everyday life before operative interference. One month after surgery, 90% of them did not report any interference with everyday life, while all of them reported no interference after 6 months of follow up. This analysis reinforces the understanding of the importance of patient reported outcomes for minimally invasive continence surgery. This study offered a unique opportunity to prospectively compare quality of life for 6 months postoperatively. Data from this study are consistent with prior findings that QoL after SUI surgery is observed after a variety of surgical approaches including Burch retropubic urethropexy, traditional sling operations, and mid-urethral slings. Most reports support roughly a 70% to 80% improvement that is sustained over time.[69–71] Analysis of the SISTEr trial comparing Burch vs. Sling showed a 78% improvement after both procedures, maintained up to 2 years.[72] Our results regarding QoL after surgery were superior to those of colposusspension and sling procedures.

Measuring QoL with different instruments poses some challenges, namely: Which is the better tool to assess patient oriented outcomes? The ICIQ, used in the current study, is a brief 3-scored and 1-unscored self diagnostic item that assesses the prevalence, frequency and volume of leakage as well as the QoL impact.[71] The ICIQ demonstrates good construct validity and reliability and high correlation with the Sandvik severity index.[73,74] In this study the ICIQ score improved from 73.57 + 12.01% (preoperative) to 2.6 + 8.09% (1 month after follow up) and then maintained at the same results at 6 months of follow up following Rolled Fortified Vaginal Flap (RFVF) surgery.

Although the success of surgery is the main factor for improving the quality of life of women suffering from stress urinary incontinence yet, other factors can play an important role in this aspect. Some models predicting changes in quality of life identified younger age, treatment success, symptom severity, and symptom bother. These factors explained more the variability in quality of life improvement after surgery.[62,69] Post operative urinary retention in addition to other postoperative complications were also suggested to affect the improvement of quality of life after surgery.[62]

Strengths of this study include the prospective, randomized design of the trial, condition-specific measures of QOL. Limitations of this study include the lack of available information on the ICIQ minimum important difference to inform clinically meaningful differences and changes over time although, the differences observed during the follow up period were big ones. Also, a longer duration of follow up would better demonstrate the sustainment of the observed improvement in the quality of life.

Thus, women undergoing Rolled Fortified Vaginal Flap (RFVF) can expect similar, substantial improvements in condition-specific QOL sustained over at least six months. Whereas many factors are associated with post-operative QoL improvement as measured, the ICIQ was associated with more direct UI-related factors and may be a good tool for SUI surgical studies.

The goal of treatment for intrinsic sphincteric deficiency (ISD) is to correct incontinence without creating significant outlet obstruction. Management of intrinsic sphincteric deficiency generally falls into one of three categories of urethral bulking agents, slings or insertion of an artificial urinary sphincter.[75,76]

Sling materials include autologus grafts, allografts, xenigrafts and synthetics. The autologous fascial pubovaginal sling remained the gold standard till newer sling materials revealed better results. Autologous sling materials include rectus fascia, fascia lata, vaginal wall, round ligament and dermis. Rectus fascia and fascia lata are the most commonly used tissues. Harvesting of autologous fascia has been associated with wound infection, entrapment of the genitofemoral nerve (rectus fascia), peroneal nerve injury (fascia lata) and poor tissue quality in patients with history of abdominal surgery.[77]

As regards to the long term outcomes of rectus fascia pubovaginal sling, Morgan et al.[74] Reported an overall success rate of 84% for women with ISD. The most common complication following pubovaginal sling surgery is acute, transient urinary retention. Most patients regain ability to void spontaneously within 72 hours, with the vast majority (greater than 90%) voiding by 4 weeks. Risk of long-standing retention is less than 5%. Another common complication is postoperative urgency. De novo urgency may develop in up to 25% of patients and de novo urge incontinence may develop in up to 10%. Both symptoms are likely secondary to the obstructive nature of the sling, as no standard parameters exist that identify appropriate sling tension.[78]

Another study by Silva-filho et al[79] to assess the efficacy of pubovaginal sling in treatment of ISD reported an objective cure rate of 88.7%, improvement in the QoL of 88%, 13% of patients suffered from a transient postoperative urine retention.[79] In a response to the long term results of the study, the authors reported that the recurrence of symptoms, when present, usually occurs in the first six months, and is usually secondary to the degeneration of the strip or loss of the sutures.[80] Regarding the voiding difficulties and detrusor instability that occurred in the study the authors responded that there is a tendency to gradually reduce the tension of the strip in the sling, diminishing the obstructive character of the procedure with consequent improvement of the voiding difficulties and the postoperative instability of the detrusor.[81]

Our success rate is comparable to that of pubovaginal sling for the treatment of ISD with a similar obstructive nature as regards to the bladder outlet. Also similar results were obtained regarding transient retention post operatively but none of our patients required urethrolysis during the follow up period.

Periurethral bulking agents have been used to treat intrinsic sphincteric deficiency for many years. By increasing urethral closure function, these agents are able to improve continence with minimal effect on voiding pressures. The ideal agent should be nonimmunogenic, hypoallergenic and biocompatible, and it should have satisfactory wound healing characteristics such as minimal fibrotic ingrowths, minimal extracapsular inflammatory response (if encapsulated) and retained bulking effect for prolonged periods.[82]

The Food and Drug Administration (FDA) has approved the use of glutaraldehyde cross linked highly purified bovine collagen (GAX collagen) for periurethral injections. Collagen works by decreasing the antigenicity and increasing the duration of the implant by increasing its resistance to collagenase. It may be injected periurethrally or transurethrally and elicits a minimal inflammatory response without foreign body reaction.[82]

The initial subjective success rate (cure/improved) of collagen injection therapy for intrinsic sphincteric deficiency is 85% to 94%.[83] The long-term (greater than 2 years) success rate is not as favourable (26% to 65%).[84] This decrease in efficacy with time is multifactorial. The durability of collagen is questionable, and booster injections are usually required to achieve continued continence. In addition, the optimal depth of collagen

placement is undefined, and appears to be in the submucosal area of the urethra. If the injection is too superficial or if too much collagen is injected at 1 time, mucosal disruption with subsequent collagen loss will occur. Patient selection can also affect the success rate of collagen injection therapy. Depending on the quality of the periurethral tissues, patient level of activity and severity of incontinence, effectiveness of collagen injection therapy may vary.[83,84]

Overall, the complication profile for collagen injection therapy is favourable. Due to a 1% to 4% reported incidence of allergic reaction to GAX collagen, all patients are skin-tested 1 month before planned treatment. Some patients have experienced delayed hypersensitivity reactions despite preoperative skin testing. The most common complications are urinary tract infection (4%), hematuria (5%), transient urinary retention (1.9% to 8%), and de novo urgency (12.6%). Cost-effectiveness remains a concern because of the need for repeat injections.[82]

The long term success rate of periurethral bulking agents is questionable and is less than our success rate. Another drawback is the requirement for recurrent booster doses. Nonetheless, the complications of bulking agents are higher compared to the complications of RFVF.

Although the artificial urinary sphincter has routinely been used in men to treat stress urinary incontinence, its use in women has been limited. It has usually been reserved for those patients with intrinsic sphincteric deficiency due to multiple failed antiincontinence operations or congenital abnormalities. The artificial urinary sphincter may be placed transabdominally and/or transvaginally. The abdominal approach has been widely supported but dissection through the urethrovaginal septum may be difficult due to extensive scarring.[85]

Regardless of the surgical approach, the sphincter cuff should be placed at the bladder neck/proximal urethra. Placement of an artificial urinary sphincter in women should not preclude sexual activity or pregnancy. It is recommended to deactivate the device during labor and delivery, and possibly for the entire third trimester.[86]

Female stress urinary incontinence treated with the artificial urinary sphincter has a success rate of approximately 90% for functional devices.[87] In the largest series (207 patients) Costa et al [88] achieved a success rate of 88.7% in patients with ISD. Mark and Webster [89] compared the results of the artificial urinary sphincter to the pubovaginal sling in 77 patients with intrinsic sphincteric deficiency. Both procedures were favourable with success rates of 84% and 91% for the artificial urinary sphincter and pubovaginal sling, respectively.[89]

Complications associated with artificial urinary sphincter implantation include erosion, infection, device failure and intraoperative injury to the urethra, bladder and/or vagina. Inadvertent injury to these organs should not preclude implantation of the device but may affect explantation rate.[85] Risk factors for explantation include age, type and number of prior surgeries, elapsed time between last procedure and artificial urinary sphincter insertion, and perioperative injury. Risk of erosion has decreased since the introduction of a modified cuff but concerns of late urethral atrophy still exist.[88]

A high success rate is establish from using artificial urethral sphincter that is equivalent or may slightly exceed that of RFVF. However, this is accompanied by a higher rate of complications in the form of erosion, infection and device failure that mandates further surgical procedures to extract and replace the device.

The transvaginal tape (TVT) procedure has become one of the most popular techniques for treating SUI because of its ease and effectiveness. A published series with a long follow-up duration showed good continence rates after the TVT procedure.[90] However, there is a controversy about the long term efficacy of the TVT procedure in women with ISD. Doo et al.[91] Reported five year follow-up results of 31 patients with VLPP below 60 cmH_2O and 64 with VLPP above 60 cmH_2O. Cure rates were 51.6% and 82.8%, respectively and the success rate of the ISD group was significantly lower. Paick et al.[92] Also reported significantly low success rate in the group below 60 cmH_2O compared the group above 60 cmH_2O (82% vs. 93.1%, p= 0.013). Another study by Sergent et al[93] reported a low success rate of 70.6% at a short term follow up and even a lower success rate of 57% at a longer follow up for the treatment of ISD with TVT. Although there are some studies[94–96] that clam that TVT is an effective treatment option for ISD, however, the success rate in these studies doesn't exceed 77%.

A Cochrane review by Ogah et al.[97] Analyzed the complications of mid-urethral tapes procedures for stress urinary incontinence. In this review the number of procedures ranged from 809 to 2,795, and the rate of major complications was low: bladder perforation occurred in 2.7-3.9% of cases (significantly higher in those with previous pelvic organ prolapse or incontinence surgery). There was no record of the squeal of the perforations. Reoperation rates relating to tape insertion or postoperative voiding dysfunction ranged from 1.6% to 2.4%; pelvic hematoma occurred in 0.7% to 1.9% of women, the majority of which needed no intervention, and only one case of bowel injury was recorded. Registries of transobturator tapes reported much lower rates of complications (e.g., bladder perforation in 0.4%). Reoperation occurred in 0.8% to 2.2% of women and hematoma occurred in 1 out of 2,543 procedures. Urethral injury rates ranged from 0.08% to 0.1%. The above the meta-analysis concluded that minimally invasive synthetic suburethral sling operations are highly efficacious both in the short and medium term for treatment of women with SUI with low rates of complications.[97]

The Food and Drug Administration (FDA) statement regarding trans-vaginal mesh placement to treat Pelvic Organ Prolapse (POP) and Stress Urinary Incontinence (SUI) was quiet alarming. This was issued October 2008 and was discussing the adverse effects of such meshes and stated that although these complications are rare, they can lead to serious consequences. The most frequent complications included erosion through vaginal epithelium, infection, pain, urinary problems, and recurrence of prolapse and/or incontinence. In some cases, vaginal scarring and mesh erosion led to a significant decrease in patient quality of life due to discomfort and pain, including dyspareunia.[98]

FDA Recommendations for physicians included: be vigilant for potential adverse events from the mesh, especially erosion and infection. Inform patients that implantation of surgical mesh is permanent, and that some complications associated with the implanted mesh may require additional surgery that may or may not correct the complication.[98] However, FDA warning about erosion was only for prolapsed meshes and didn't include tapes used for SUI.

In our study, we didn't have any incidence of neither bladder perforation nor bowel injury. Although the readjustment rate (5%) was higher than that found in literature but this could be explained by the smaller number of patients recruited in this trial in comparison to the larger number of candidates found in literature. There weren't any reported cases of pelvic hematoma and all patients were discharged 24 hours after surgery. Only 1 patient (5%) reported mild dyspareunia post operatively.

Raz et al.[99] Introduced the anterior vaginal wall sling in 1989 after recognizing the morbidity associated with harvesting autologous fascia. The goal of this procedure is to construct a sling from the anterior vaginal wall and underlying fascia to compress and support the urethra. They reported a 94% success rate in a select group of 32 patients with ISD at a minimal follow-up of 10 months.[38]

A modification by Vasavada et al.[100] In 1998 referred to as in situ vaginal wall sling. Using this technique, Vasavada do not detach the urethropelvic ligaments, limit surgical dissection, conserve pelvic floor support structures, and use bone anchors. Twenty patients with either ISD, anatomic incontinence or both underwent this operation and 95% were cured at a mean follow-up of 26.2 months.

The surgical technique presented by Costantini at al.[101] presents some variations on the original Raz technique, including the positioning of small Marlex meshes to reinforce the sling so as to ensure long-term stability and they also cross ligature suture above the rectus fascia similar to the technique used in this study. The success rate on the basis of daily pad-use (dry and improved) of 92.3% and of 77% on the basis on patient's satisfaction. Voiding dysfunction with post-void residue (PVR>20% of total bladder volume) was present in 20% of patients. 12.5% resolved within 2 weeks and slight obstructive symptoms persisted in 7.5% of patients but none needed self- catheterization for more than 3 months.[101]

In 1996 Kaplan et al.[102] compared the efficacy and safety of the anterior vaginal wall to the autologous rectus fascial sling in treatment of women with ISD and reported that both were equally effective in treating stress urinary incontinence. However, the vaginal wall sling was associated with shorter hospital stay and decreased postoperative morbidity.

Results have been extremely divergent in recent reports using the vaginal wall sling. The discrepancies may be linked to the diverse techniques, to whether the endopelvic fascia is opened, to the filaments chosen for the sutures, to the tension of the thread and even to the different techniques of suprapubic suture ligature.[101]

Some authors[103] have reported that autologous slings usually fail within the first 3 months after surgery because of suture breakage, incorrect sling placement and tying the sling too loosely. Surprisingly, some data on outcomes reveal a cure rate of 46–55% after 4 years.[104,105] Implicit in some reports is the progressive decrease in cure rates for autologous slings with longer follow-ups. The reasons proposed for this failure was that failure occurs 6 months after surgery and may be due to progressive loss of collagen and elastin from the endopelvic fascia, loss of striated muscle from the pubococcygeus muscle and development of site specific fascial tears.[100]

The modification of the vaginal flap which we present avoids most of the weak points of such material. The cross sutures taken through the flap make it resistant to the inherent laxity and stretch-ability of the vaginal tissue. Also, it allows very strong attachment of threads to the flap. We think these modifications would offer the vaginal flap better results and for longer duration. In ISD management, some degree of tension would be applied to the flap to allow better cure. This is prohibited when using TVT or TOT, otherwise complications and erosions would occur.

The vaginal wall flap is hung by suspension sutures with supporting material positioned immediately under the proximal urethra; only the suspension sutures enter the Retzius space. In this case urinary incontinence may recur if the suspension sutures break or tear through the origin or insertion sites during the early post-operative period of tissue remodelling. Consequently the potential site of weakness in a patch sling is not the flap giving way at its centre but at its insertion point where sutures can rip out. To prevent this, we open the endopelvic fascia, so periurethral fibrosis surrounding the suspension sutures helps maintain results over time. We fortify the vaginal flap by 2 diagonal rows of under-running sutures in order to increase the tensile strength of the flap and so suture breakage is avoided. We cross the suture-ligature above the rectus fascia and finally, we use non-absorbable Prolene sutures.

The main limitations of this design include: a small cohort and the long duration required to collect cases and the short follow up period of 6 months. We strongly recommend such procedure and confirm its high success rate and low complications rate with no majorl complications. Further long-term follow up is still required.

SUMMARY

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Intrinsic sphincter deficiency (ISD) is an important and overlooked etiological factor in stress urinary incontinence (SUI). Recent advances in urodynamic studies have highlighted the accurate diagnosis of ISD. This has been emphasized after the high failure rate of surgical operations to correct SUI due to ISD. In addition to the high prevalence rate of UI especially in women, it is considered as an important social health problem that affects daily activities and quality of life. This problem affects the physical, mental, and sexual aspects of a person and causes deprivation of social status and decreases quality of life and self confidence.

Thus, the current study was formulated to reveal the impact of Rolled Fortified Vaginal Flap (RFVF) operation on the treatment of stress urinary incontinence (SUI) due to intrinsic sphincter deficiency (ISD) regarding technical feasibility, complications, outcome, and reveal its impact on the quality of life of women suffering from stress urinary incontinence. To achieve these aims the experimental prospective study design was utilized. All studied women were followed up for a period of 6 months to detect any postoperative complication and reveal changes in the quality of life.

This study included 20 female patients complaining of Stress Urinary Incontinence (SUI) due to Intrinsic Sphincter Deficiency (ISD) presented to Main Alexandria University Hospitals. Age ranged from 20 to 58 with a mean of 43 ± 8.7. Gravidity ranged from 1 to 8 with a mean of 3.8 ± 1.8, while parity ranged from 1-6 with a mean of 2.8 ± 1.1. Those suffering from abortion constituted 45% of studied women. All of the studied women had at least one normal delivery, while three of them were subjected to caesarean section. Only 2 women suffered from hypertension (10%) and another two women suffered from diabetes mellitus. Enquiring about surgical operation revealed that one woman had vaginal tape and another one had total hysterectomy.

Preoperative urodynamic findings showed that Valsalva peak point pressure ranged from 20 to 60 cm water with a mean of 50 ± 11.2 cmH_2O and a median of 53.50 cmH_2O. All studied women had a positive cough test. Women with positive urethral hypermobility constituted 45% (9 women) of the studied women while the rest (55%) had a negative urethral hypermobility.

Mean maximum flow rate (Qmax) of urine slightly decreased from 22.85 ± 3.89 ml/s preoperatively to 22.2 ± 3.5 ml/s at 1 month follow up to 21.6 ± 3.4 ml/s at 6 months follow up however, this decrease is clinically and statistically insignificant, P = 0.115. All of our studied patients didn't show leak at any point of the urodynamic study during either the 1 month or 6 months follow up, except for 3 patients. Only 1 of them needed an immediate readjustment of the hanging sutures and the other 2 continued to have mild stress urinary incontinence.

No significant change was observed for free Q max over the follow up period (27.05 ± 3.6 compared with 26.9 ± 3.0, P = 0.056). Max Pdet showed a slight and insignificant decreases as the studied women had a mean of 32.85 ± 4.043 at 1 month of follow up and 31.1 ± 3.8, P = 0.187). These two parameters were utilized to detect urinary obstruction by using bladder outlet obstruction nomogram to reveal cases with urinary obstruction. Four patients (20%) suffered from mild urinary obstruction at 1 month of follow up. This number decreased to just only 2 patients (10%) after 6 months of follow up.

Transient retention of urine was only observed immediately post operatively among 25% of women, while no women suffered such symptom either after 1 or 6 month of follow up, P = 0.007). Also UTI showed the same pattern but with only three cases (15%), P = 0.050. Stress Urinary Incontinence (SUI) was observed among three patients (15%) immediately postoperatively and two cases (10%) after one month of follow up that remained to complain of mild stress incontinence at 6 months follow up.

The overall mean ICIQ-UI-SF score decreased from 73.5 ±12.0% (preoperative) to 2.6 ± 8.0% (1 month after follow up) and was maintained at the same level at 6 months of follow up, P < 0.001. After one month of follow up only 10% were leaking during physical activity or exercising once weekly and this was also maintained at the 6 months follow up period, P < 0.001.

CONCLUSIONS

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At the end of this study we concluded that RFVF is a safe and effective technique in the management of females complaining of stress urinary incontinence (SUI) due to intrinsic sphincter deficiency (ISD) harbouring fewer complications during the short follow up period of 6 months.