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PLICATION OF HAEMORRHOIDS (HAEMORRHOIDORRHAPHY)

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Introduction: *Haemorrhoidal disease (HD) involves prolapse of vascular cushions limited to the anal canal and perianal area. Symptomatic HD is dealt with by non operative and operative methods which aim at reducing the haemorrhoidal cushions and their covering mucosa. Surgical treatment offers the best chance of permanent cure. The ideal procedure for treatment of HD should be simple, minimally invasive, correct all the anatomical abnormalities and avoid early recurrence of symptoms. HD, however disabling, is harmless. Treatment should therefore never induce a significant element of risk to the patient.*
Aim of the work: *Is to suggest and try a simple but an effective method of surgical treatment for HD that suits all symptomatizing degrees of the disease.*
Patients and methods: *The suggested method depends on the use of interrupted stitches that tailor the lining of the anal canal almost back to normal without incisions or excisions.*
Results: *The results of this plication or haemorrhoidorrhaphy are obliteration of vascular ectazia, occludsion of feeding vessels, refashioning the redundant mucosa and providing support for the disintegrated fibromuscular submucosal tissue that precipitates the HD.*
Conclusion: *This method minimizes, almost to nil, per- or postoperative bleeding, and leaves no raw areas however advanced is the disease.*

Keywords: *Surgical treatment of haemorrhoids*

INTRODUCTION

Haemorrhoidal disease (HD) involves prolapse of vascular cushions limited to the anal canal and perianal area.[1] In other words, they are ectatic venular-arteriolar communications of the haemorrhoidal plexus.[2] The development of HD is thus associated with displaced anal cushions which are subject to engorgement, thrombosis and bleeding.[3] Men seam to be affected roughly twice as frequently as women.[4] In normal people it would be acceptable to say that every one has piles at some stage. HD seldom follows a regular pattern, and like many other diseases has a great natural variation in severity.[5]

Sclerotherapy is a non-operative method of treatment for first degree (bleeding) or second degree (mild prolapse) HD. Rubber band ligation deals with internal haemorrhoids and needs special equipment. Bipolar diathermy, direct current electrotherapy and infrared photocoagulation, all rely on the coagulation, occlusion and obliteration/sclerosis of the haemorrhoidal vascular pedicle above the level of the anal transition zone.

Surgical treatment offers the best chance of permanent cure of haemorrhoids because no other method approaches the precision and certainty of an expertly performed operative haemorrhoidectomy.[6] Surgical treatment involves excision of the haemorrhoidal masses with or without closure of the resulting wounds (closure or open methods), with no difference in pain or other complications between the patients of the two methods. However, wound dehiscence and longer healing times were seen in the closure method. Circular stapled haemorrhoidectomy deals with internal haemorrhoids beside conventional excision of the external components.[7] Haemorrhoidectomy with ligasure suits anticoagulated patients,[8] while an ultrasonic scalpel reduces the row area left behind.[9] However, all those recent instruments are costly.

Pile suture was considered by Farag (1978) to have advantage over conventional haemorrhoidectomy in terms of incidence of complications and patient comfort.[10] However, both the pile suture and its modifications did not gain acceptance as they are aassociated with postoperative thrombosis of the external haemorrhoidal plexus. Ligation anopexy proposed by Hussein (2001) may be also followed by tissue sloughing and ulceration exactly as in rubber band ligation.[11]

This work suggests a simple but an effective method of surgical treatment for HD that suits all degrees of symptomatic haemorrhoids, involving both the internal and external components, whether they are straightforward or complicated cases. In addition, it is a nonexpensive method.

PATIENTS AND METHODS

This work has been done in Kasr El-Aini hospitals, Cairo university, Egypt in the period from May, 2001 to May, 2003. The indications for surgical intervention included grade 3 or 4 internal or intero-external haemorrhoidal disease, in addition to bleeding haemorrhoids of the 1st and 2nd degrees. A case of thrombosed external haemorrhoids involving the whole circumference of the anus was also included. The number of cases was 32 including 24 males and 8 females. The age range was 28-58 years in males and 35-55 years in females. The study protocol has been approved by the committee of postgraduate studies and medical research, Faculty of Medicine, Cairo University. An informed consent was also taken from the patients included in the study.

The range of complaints included bleeding, discomfort, pruritus, prolapse, swelling, pain or discharge. All cases were primary haemorrhoids being precipitated in these cases by one or more of the following factors: constipation, diarrhoeal disorders, straining at bowel movements, failure to stop straining when the rectum has been completely evacuated, repeated pregnancy and positive family history.

After taking a detailed history, general and local physical examination was done including inspection, digital examination and anoscopy, in addition to sigmoidoscopy for those above 40. Any cases having associated anal pathology like anal fissure or fistula were excluded from the study. Associated diseases were in the form of D.M. in 4 cases, hypertention in 5 cases and hepatotic hypoprothrombinaemia in one case. Bowel preparation was omitted as liquid stools seeping during surgery after preparation with enema are usually more bothering and contaminating. However, the patient was always advised to avoid bulk formers 2 days before surgery with the addition of a laxative. Perioperative antibiotic prophylaxis was given for all cases in the form of 1 g. of cefoperazone immediately before surgery, and 2 & 8 hours after the first injection.

General or low spinal anaesthesia was given. The patient was put in the lithotomy position with the buttocks projecting well beyond the lower edge of the operating table. The perianal region and buttocks were cleaned with an iodophore antiseptic and draped. The anal canal was gently swabbed with the surgeon's gloved finger wet with the antiseptic.

The procedure: A pair of Allis forceps is applied with traction at the mucocutaneous junction of one haemorrhoidal mass, thus bringing it into view, while a narrow Dever retractor is gently inserted in the anal canal to protect other haemorrhoids and create a working space in the anal canal. The pedicle is encircled with a stay suture hanged with a mosquito forceps without being tied. Traction is applied on the stay suture and the Allis forceps, and in between, multiple interrupted sutures of 3/0 polyglycolic acid with a round body needle are applied to plicate the bulk of the haemorrhoid involving the mucosa and submucosa down to, but not involving the muscle wall. The stitches are started distally and proceed proximally reaching up to the stay suture which is finally tied up (Fig.1 a-d) , with always squeezing the tissue bulk before tightening the sutures (Fig.2 a-d). Daughter haemorrhoids as well as side extensions of the haemorrhoidal masses above and below the dentate line are followed whether they have a longitudinal , an oblique or a transverse direction, and are subsequently obliterated with multiple separate stitches. In this way, the irregularly bulging mucosa of the anal canal is tailored and refashioned back to the normal with complete obliteration of all the haemorrhoidal masses without incisions or blood loss. At the beginning of this study, the external haemorrhoidal masses (when present) were left intact in a few cases, with the belief that they will shrink spontaneously after obliterating the internal component. This usually took two months postoperatively. However, those cases were not included in the study cases. In the subsequent few cases, after plicating the internal haemorrhoidal component, excision was done for the external mother piles, so as to escape the temporary bothering sensation the patient has postoperatively until the external components shrink, as he always expects to find no residual external swellings immediately postoperatively. Again those few cases were not included in the study cases. Until that stage of the research we avoided plication of the external component due to the belief that plicating external haemorrhoidal masses might induce much postoperative pain, being applied on a sensitive anoderm. However, in the subsequent 32 cases which represent all the cases included in this study, the same technique of plication was applied to the external elements in the same way as for the internal elements

without any remarkable increase in the degree of postoperative pain. As regards the method of suturing, the early cases were done with plicating continuous sutures which take less operative time, but the patients noticed in the first few postoperative weeks the passage of long segments of suture material per anus with the proximal end of the thread sometimes still fixed inside. That was bothering to the patient and sometimes obliged him to use scissors to cut the external extention of the thread. This made it more logic in subsequent cases to use interrupted sutures, mostly 8-shaped. The refashioning of the anal lining is thus controllable without any hazard of narrowing at any level, and no raw areas are left behind. A sense gained from the experience of haemorrhoidectomy makes it easy for the surgeon to discriminate the haemorrhoidal masses from the underlying sphincteric muscles, so as not to be unnecessarily included in the stitches. Thrombosed internal haemorrhoids were dealt with by making a small incision at the summit of the thrombus to express the clotted blood, followed by including the site of incision within the plicated haemorrhoidal mass.

In the case having only exteranal haemorrhoids with multiple thrombi, multiple interrupted snip incisions in different directions enabled expressing all the clotted blood followed by multiple refashioning interrupted sutures for the swollen anal verge being all around involved with external haemorrhoids (Fig. 3 a-c). This enabled getting rid of all the external haemorrhoidal elements all around, without any excisions that might otherwise have induced narrowing of the anal verge. (Fig. 3 d) shows the final appearance at the end of external haemorrhoidorrhaphy.

Care must be taken that the normal mucosal and anodermal cushions should be preserved and not included in suturing, so as to avoid induction of stenosis or stricturing. On the other hand, anal cushions share in the control of continence to flatus. No anal pack was needed at all in any of the cases, but the procedure was usually ended by putting some 5% xylocaine jel in the anal canal without a pack.

After recovery from anaesthesia, the patient was usually given one dose of a narcotic analgesic, followed by a nonsteroidal analgesic injection 12 hourly for the first 48 hours. This was followed by an oral nonsteroidal analgesic after meals for about 10 days. A bulk laxative was given for about 2 weeks postoperatively together with encouraging early food intake including fresh fruits to open the bowel. The patient was also advised to put 5% xylocaine jel within the anal canal before defecation. No postoperative anal dilatation was required.

RESULTS

The suggested procedure for haemorrhoidal disease was done to 32 cases including 24 males (75% 0f the cases) and 8 females (25% of the cases). The average age of presentation for males was 46 years (range: 28-58) and for females was 43 years (range: 35-55). Table 1 shows the incidence of presenting symptoms.

The source of pain in the three cases having this symptom on presentation was associated thrombosis. Table 2 shows the classification of haemorrhoids among the cases.

This technique offered immediate control for bleeding haemorrhoids in patients presenting with bleeding. The median time of the procedure was 40 minutes. There was almost no blood loss except for mild bleeding at the needle prick sites in one case having chronic liver disease and hypoprothrombinaemia. The median hospital stay was one night as actually all the cases were discharged the next day after surgery.

Postoperative pain was evaluated using the subjective pain score known as visual analogue scale (VAS). The intensity of pain in this scale is supposed to lie between 1-10.[12] The zero of the scale means no pain while the value 10 means the worst pain imaginable. The descriptive terms of the degree of pain shown in Table 3 were used.

The average intensity of pain was 6 in the first postoperative day, 5.8 immediately after the first bowel motion and 4 in the 7th postoperative day. Those having external haemorrhoidal elements usually had more prominent pain whether they had their external haemorrhoidal masses plicated (included in the study cases), left untreated or excised. When cases having only internal haemorrhoids were evaluated for pain , they had an average score of 5 in the first postoperative day, 4.6 immediately after the first bowel motion and 3.3 on the 7th postoperative day.

Postoperative complications were almost absent. However, 3 cases (9.37%) had postoperative retention of urine that necessitated short term catheterization. Skin tags were remarkably noted in 3 out of the 32 study cases (9.4%) who had their external haemorrhoidal components involving most of the circumference of the anal verge. There were no complications in the form of intra-operative or postoperative bleeding, anal stenosis or incontinence. There were no events of local or systemic complications or re-operation. A follow up examination was done weekly for all cases during the first month and every two weeks during the second month. Monthly visits then followed for 6 months, and then every 6 months. Otherwise, contact was kept with all cases to come back in case of development of any complaint. Complete healing with disappearance of stitches leaving a smooth anal mucosa was noted in 28 out of the 32 cases after one month (87.5%). The other 4 cases had their vicryl stitches fallen off within a maximum of two months leaving no residual anal canal swellings. A minimal serosanguineous discharge was noted for a

maximum of 2 weeks postoperatively. No complaints of faecal urgency or even incontinence to flatus were noticed in any case. Most of the skin tags were noted to undergo atrophy within 6 months. No recurrence was noted during the period of follow up which was maximally 2 years.

Table 1. Incidence of symptoms.

Symptom	Number of cases	Percentage
Bleeding	16	50%
Discomfort	14	43.75%
Pruritus	13	40.6%
Prolapse	11	34.37%
Swelling	10	31.25%
Pain	3	9.3%
Discharge	2	6.25%

Table 2. The classification of haemorrhoids in the study cases.

Grade	Number of cases	Percentage
I	1	3.12%
II	2	6.25%
III	27	84.38%
IV	2	6.25%

Table 3. Application of the VAS.

Pain description	Score	Pain description	Score
Very mild	1	Severe	6
Mild	2	Very severe	7
Below moderate	3	Intolerable	8
Moderate	4	Incapacitating	9
Above moderate	5	Worst imaginable	10

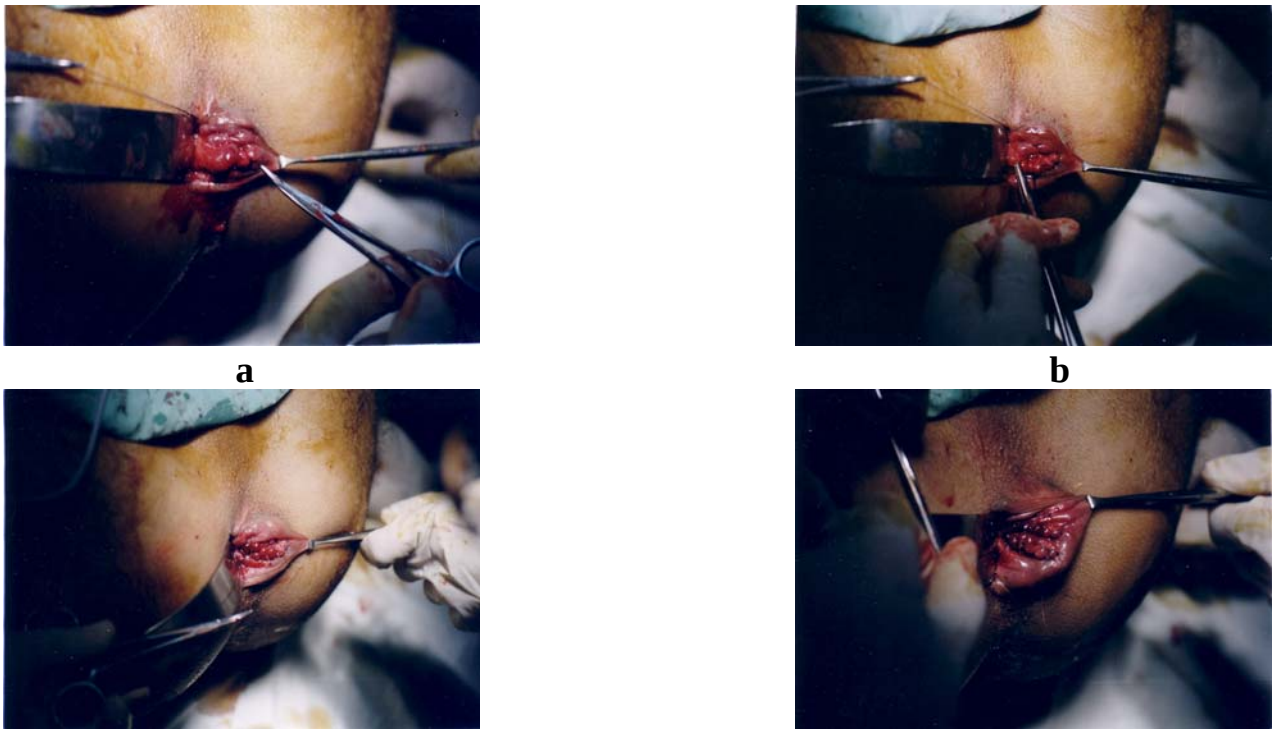

Fig 1 (a-d). Plication (haemorrhoidorrhaphy) for bleeding haemorrhoids at 3 o'clockposition.

Fig 2 (a-d). 11 o'clock haemorrhoidorryaphy with the final look of the anus being demonstrated.

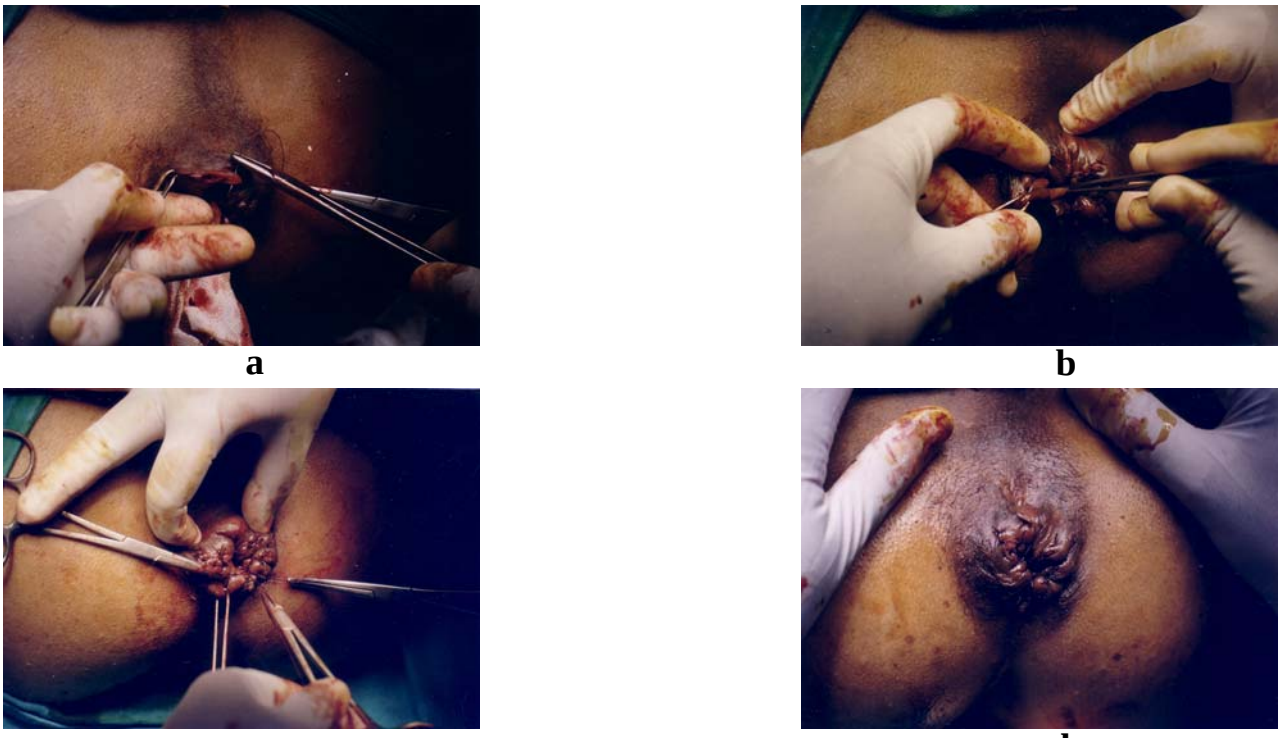

Fig 3 (a-d). Plication (haemorrhoidorrhaphy) for multiple thrombosed external haemorrhoids.

DISCUSSION

The pathogenesis of Haemorrhoidal disease (HD) begins with disintegration of the fibromuscular supporting layer leading to sliding down, congestion and enlargement of the arteriovenous communications with defecation particularly on straining.[13] HD, however disabling, is harmless. Treatment should therefore never induce significant risk to the patient.[9] The ideal procedure should therefore be minimally invasive, correct all the anatomical abnormalities and avoid early recurrence of symptoms, with almost no morbidity. Surgical techniques evolved mainly to solve the problem of postoperative pain, bleeding, stenosis complicating wide raw areas and recurrence.[14]

Sclerotherapy is a form of non-operative treatment for early cases of HD. However, it has its own local and systemic hazards that are totally avoidable through the technique of plication suggested in this work. Plication gives the same therapeutic effect of injection sclerotherapy, but in an engineered controllable way.

For more advanced cases, both conventional and closed haemorrhoidectomy are associated with resection of the haemorrhoidal cushions[15] with the known risk of per-operative and postoperative bleeding. Most of that bleeding which can be life threatening comes from the edges of the cut mucosa.[9] The closed method has an advantage over the open in terms of pain and healing.[15] However, closed haemorrhoidectomy may be followed by wound failure and secondary haemorrhage.[9] On the other hand, Stapled rectal mucosectomy tries to leave no chance for bleeding from mucosal edges after tissue resectrion, but a complicating rectal stenosis due to rigidity of staple line and loss of the hand sense that is replaced by machine, may lead to outlet obstruction and redo surgery.[16] The stapler may also resect parts of the sphincters thus harming continence. An associated enterocele may get damaged.[17] Rubber banding is done for internal haemorrhoids and requires 7-10 days for sloughing of haemorrhoidal masses with the possibility of secondary haemorrhage that needs re-admission in 1-2% of cases. Severe systemic sepsis may also complicate bulky tissue sloughing. The band procedure is followed by post-defecation pain and marked tenesmus.[18]

The pile suture operation is based on the application of 3 stitches for every pile, one at the pedicle to occlude the superior haemorrhoidal vessels, the second above the pectinate to interrupt the connection between the internal and external haemorrhoidal plexuses, and the third in between.[10] On the other hand, ligation anopexy aims at strangulating each haemorrhoidal mass in the form of a mucosal tag via a single stitch similar to what a rubber

band does (but a stitch is cheaper) in addition to fixation of this stitch into the internal sphincter up in the anal canal.[11] The pile suture procedure leaves bulky tissues behind which undergo initial painful congestion and engorgement for up to 2 weeks followed by gradual shrinkage along 2weeks to 3 monthes.[10] The procedure of ligation anopexy is supposed to reduce the prolapsed anal mucosa, but a single stitch is not enough to do so. It has also the disadvantage of postoperative sloughing of the strangulated haemorrhoidal masses and mucosal ulceration.

Unlike the pile suture, ligation anopexy or their modifications, the suggested plication obliterates vascular ectazia, occludes feeding vessels, plicates redundant mucosa and provides a strong support for the disintegrated fibromuscular submucosal tissue, thus reducing the mucosa back to its normal site without incisions or excisions. The anal cushions are thus preserved as they are not excised, but in stead are tailored back to the normal. The procedure can therefore be called plication of haemorrhoids or more briefly haemorrhoidorrhaphy, as linguistically the greek word rhaphe means suture, and rrhaphy means surgical suturing as in herniorrhaphy, laparorrhaphy or colporrhaphy. The absence of raw areas with plication negates the need for anal packing at the end of the procedure and also the need for any postoperative anal dilatation. This procedure is followed after one month by disappearance of the stitches leaving a smooth mucosa in 87.5% of cases, while other cases take a bit longer time. This is comparable to complete healing after one month found in 90% of cases after closed haemorrhoidectomy and in 40% of cases following open haemorrhoidectomy.[14]

The possibility of sphincteric injury known in classic surgery or in stapled rectal mucosectomy does not exist with plication, as only the mucosa and submucosa are involved in the stitches.

Among the cases of this study, bleeding was the commonest presenting complaint. However, the procedure offered immediate control of bleeding, and definitive treatment at the same time. It was also safe and effective in a patient having hypocoagulability.

Postoperative pain is the main adverse effect of surgical treatment for HD.[19] It is well known that conventional haemorrhoidectomy is followed by pain that may need strong oral or intramuscular analgesics including opiates with a sedative like Diazepam. The pain is mainly due to the raw areas left behind after surgery. Conventional haemorrhoidectomy needs about 2 months for complete healing of residual wounds, Occasionally one of the wounds of haemorrhoidectomy may persist as an anal fissure with continuing pain and discharge.[9] On the other hand, removal of the pack with the first bowel motion after surgery is associated with much suffering. With plication, the intensity of pain was unremarkable for cases of pure internal haemorrhoids. However, with the presence of external haemorrhoidal components, pain was more prominent, but this was almost equal to that noted with conventional surgery. That is to say, the use of plicating stitches in the lower (anodermal) lining of the anal canal or making raw areas in it will mean stimulation of its somatic innervation which is highly sensitive to pain.[20] The duration of the procedure of plication and its median hospital stay were almost the same as in conventional haemorrhoidectomy. Only 3 of the 32 study cases (9.4%) had postoperative urine retention that necessitated temporary catheterization. This also occurs in conventional as well as in submucosal haemorrhoidectomy.[19]

In conclusion, plication of haemorrhoids is a safe, cheap and effective treatment that offers immediate control for all grades of the disease. It also preserves the anal cushions which are tailored back to normal and reduced to their original position. No blood loss is encountered and no raw areas are left behind. The results of this work should be confirmed on a larger clinical basis and compared with conventional surgery.

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