



Infrared Coagulation Sclerotherapy and Ksharakarma in Grade I-II Haemorrhoids A Comparative Review.

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ABSTRACT

Haemorrhoidal disease is one of the most frequently encountered benign anorectal disorders and commonly presents with painless rectal bleeding, prolapse, itching and discomfort. Although dietary and lifestyle modification remains an important component of initial management, persistent symptomatic grade I and II internal haemorrhoids may require an office-based or parasurgical intervention. Modern proctology commonly employs injection sclerotherapy and infrared coagulation (IRC), while Ayurveda describes Ksharakarma as an important parasurgical modality in the management of Arsha.

The three procedures have a broadly comparable therapeutic objective: to reduce vascular congestion and/or induce controlled tissue injury followed by fibrosis, thereby reducing bleeding and supporting fixation or shrinkage of the haemorrhoidal tissue. However, the mechanism, material used, technical principles and adverse-effect profiles differ. Sclerotherapy produces a controlled inflammatory and fibrotic response following injection of a sclerosant. Infrared coagulation produces localized thermal injury and subsequent fibrosis. Ksharakarma uses a carefully prepared alkaline substance applied locally to produce therapeutic tissue destruction followed by healing.

This review discusses the conceptual basis, indications, mechanisms, procedural principles, advantages, limitations and complications of IRC, sclerotherapy and Ksharakarma, with particular emphasis on grade I–II haemorrhoids. An attempt is made to interpret Ksharakarma within the framework of contemporary minimally invasive anorectal practice without equating the three procedures as identical interventions.

Keywords: Arsha, haemorrhoids, Ksharakarma, Pratisaraneeya Kshara, infrared coagulation, sclerotherapy, parasurgical procedure, Shalya Tantra.

INTRODUCTION

Haemorrhoidal disease is a common anorectal condition characterized clinically by symptoms arising from pathological enlargement, displacement or vascular changes involving the normal haemorrhoidal cushions. Patients may present with bleeding per rectum, prolapse, pruritus, mucus discharge, discomfort or a sensation of incomplete evacuation.

Internal haemorrhoids are traditionally classified according to the degree of prolapse:

- Grade I: Haemorrhoids remain within the anal canal and do not prolapse.
- Grade II: Prolapse during straining but spontaneously reduce.
- Grade III: Prolapse during defaecation and require manual reduction.
- Grade IV: Permanently prolapsed and irreducible.

The majority of uncomplicated grade I and II haemorrhoids can initially be managed with dietary modification, adequate fibre and fluid intake, correction of constipation and appropriate bowel habits. When symptoms persist despite conservative measures, minimally invasive procedures become relevant. Current colorectal guidance recognizes sclerotherapy and infrared coagulation among office-based treatment options for symptomatic grade I–II haemorrhoids and selected grade III disease.

In Ayurveda, haemorrhoidal disease is described under Arsha, an important anorectal disorder discussed extensively by Acharya Sushruta and other classical authorities. Sushruta describes four broad approaches in Arsha management—Bheshaja, Kshara, Agni and Shastrakarma. Ksharakarma is particularly important because it provides a parasurgical method between purely medicinal management and conventional excisional surgery.

Among the various approaches available today, comparison of modern office procedures with Ayurvedic Ksharakarma may provide an interesting academic framework for Shalya Tantra. However, such comparison should be based on mechanism and clinical purpose rather than assuming that the procedures are pharmacologically or technically identical.

AIM AND OBJECTIVES

Aim

To review and comparatively analyse infrared coagulation, injection sclerotherapy and Ksharakarma in the management of grade I–II haemorrhoids, with emphasis on

their principles, mechanisms, indications, advantages, limitations and clinical applicability.

Objectives

1. To describe the contemporary concept and grading of internal haemorrhoids.
2. To explain the principles of infrared coagulation.
3. To explain the mechanism and technique of injection sclerotherapy.
4. To review the Ayurvedic concept of Ksharakarma in Arsha.
5. To compare the three procedures from surgical and therapeutic perspectives.
6. To identify the possible advantages and limitations of each modality.

MATERIAL AND METHODOLOGY

This article is a narrative review based on classical Ayurvedic concepts and contemporary literature concerning haemorrhoidal disease and minimally invasive treatment. Relevant information was considered from standard Ayurvedic texts, contemporary surgical literature, professional guidelines and published clinical studies.

The review focuses principally on internal grade I and II haemorrhoids, as these are the stages in which office-based procedures and parasurgical approaches are most relevant.

5. Haemorrhoids: Modern Perspective

Haemorrhoidal cushions are normal anatomical structures that contribute to anal continence. Disease develops when these cushions become symptomatic because of enlargement, vascular congestion, displacement or associated mucosal changes.

The most common symptom of internal haemorrhoids is bright-red bleeding during or after defaecation. Prolapse becomes increasingly important as the grade increases.

Before performing an intervention, alternative causes of rectal bleeding should be considered. A proper anorectal examination, including digital examination and anoscopy when appropriate, is important for establishing the diagnosis. Recent expert guidance specifically emphasizes anoscopic assessment before treatment when feasible.

Ayurvedic Perspective of Arsha

The term Arsha is derived from the concept of a condition that troubles an individual like an enemy. It is described among important disorders of the anorectal region.

Ayurvedic texts describe different types of Arsha according to predominance of Dosha and other factors. Clinical manifestations may include bleeding, pain, difficulty in evacuation, itching, prolapse and altered bowel habits depending on the type.

The classical management of Arsha includes:

Bheshaja → Kshara → Agni → Shastra

This therapeutic sequence demonstrates the broad surgical philosophy of Ayurveda, beginning with conservative management and progressing towards parasurgical and surgical interventions according to disease characteristics.

Ksharakarma occupies an important position in this spectrum.

Ksharakarma

Kshara is an alkaline medicinal preparation obtained through pharmaceutical processing of selected plant materials. Depending upon the preparation and intended application, different grades and strengths of Kshara may be used.

For anorectal disease, Pratisaraneeya Kshara refers to local application of Kshara over the pathological tissue.

Classically, Kshara is attributed with properties and actions such as:

- Chhedana
- Bhedana
- Lekhana
- Patana
- Shodhana

The therapeutic action can be understood as controlled chemical tissue injury followed by tissue reaction and healing.

Modern experimental interpretations have proposed that the alkaline nature of Kshara can produce protein denaturation and local tissue destruction. Clinically, the desired effect in selected haemorrhoidal tissue is reduction of the pathological mass with subsequent healing and fibrosis.

Recent Ayurvedic literature continues to describe Pratisaraneeya Kshara as a parasurgical option for selected internal haemorrhoids.

Infrared Coagulation

Principle

Infrared coagulation is an office-based treatment in which infrared energy is applied to the base of an internal haemorrhoidal column.

The infrared energy is converted into heat within the tissues, producing localized coagulation and controlled tissue injury. Healing subsequently results in fibrosis and fixation of the mucosa.

Thus, the therapeutic sequence can be represented as:

Infrared energy → thermal tissue injury → coagulation → inflammation → fibrosis → fixation/shrinkage

Indications

IRC is particularly useful for:

- *Symptomatic grade I haemorrhoids*
- *Selected grade II haemorrhoids*
- *Predominantly bleeding haemorrhoids*
- *Patients requiring an outpatient procedure*

Current guidelines recognize IRC as an effective office-based treatment, particularly for early-grade disease.

Technique

After appropriate positioning and identification of the haemorrhoidal column, the infrared probe is applied to the mucosal tissue above the dentate line.

Controlled infrared pulses are delivered to produce localized coagulation.

Usually, treatment is directed towards the vascular pedicle or upper part of the haemorrhoidal tissue rather than the highly sensitive anoderm.

The procedure is generally performed without major anaesthesia and can be completed in an outpatient setting.

Advantages

- *Office-based procedure*
- *Relatively quick*
- *Minimal instrumentation*
- *Usually causes little post-procedure discomfort*
- *No tissue excision*

- Early return to routine activities

Limitations

- Less suitable for large prolapsing haemorrhoids
- Recurrence or need for repeat treatment may occur
- Effectiveness decreases with increasing prolapse
- Multiple treatment sessions may sometimes be required

Recent literature indicates that IRC has good utility in early haemorrhoidal disease, while outcomes become less favourable as prolapse severity increases.

Injection Sclerotherapy

Principle

Sclerotherapy involves injection of a sclerosant into the submucosal region of the haemorrhoidal tissue.

The injected agent produces local tissue irritation and inflammation. This is followed by fibrosis, which reduces vascularity and fixes the mucosa to underlying tissues.

The therapeutic sequence can be summarized as:

Sclerosant → local inflammation → endothelial/tissue injury → fibrosis → vascular reduction and fixation

Commonly Used Sclerosants

Depending on regional practice and availability, agents used for haemorrhoidal sclerotherapy include substances such as:

- Phenol-containing preparations
- Polidocanol
- Other approved sclerosant preparations

The choice of sclerosant depends on institutional protocol and clinician experience.

Indications

Sclerotherapy is commonly considered for:

- Grade I haemorrhoids
- Selected grade II haemorrhoids
- Predominantly bleeding haemorrhoids
- Patients in whom a simple office-based procedure is preferred

Advantages

- Simple technique
- Can be performed as an outpatient procedure
- Does not require excision
- Useful particularly for bleeding
- Usually associated with limited post-procedure disability

Complications

Possible complications include:

- Pain due to incorrect injection site
- Bleeding
- Local inflammation
- Ulceration
- Rare urinary or pelvic complications
- Infection, although uncommon

Correct anatomical placement of the injection is therefore essential.

Comparative Understanding of Ksharakarma, IRC and Sclerotherapy

Although the three techniques are different, an important similarity exists: all attempt to produce a controlled local tissue response that ultimately reduces symptoms and supports fibrosis/fixation.

Parameter| Ksharakarma| Infrared Coagulation| Sclerotherapy

Nature| Chemical parasurgical procedure| Thermal procedure| Injection-based chemical procedure

Principal agent| Kshara| Infrared energy| Sclerosant

Main tissue effect| Chemical cauterization/tissue destruction| Thermal coagulation| Inflammatory and fibrotic reaction

End result| Tissue shrinkage and healing| Coagulation and fibrosis| Fibrosis and fixation

Major use| Selected Arsha| Early internal haemorrhoids| Early internal haemorrhoids

Anaesthesia| Depends on procedure and site| Usually minimal/no anaesthesia| Usually minimal/no anaesthesia

Setting| OPD/procedure room| Office/OPD| Office/OPD

Excision| No| No| No

Repeat treatment| May be required| May be required| May be required

Major limitation| Tissue injury if improperly applied| Less effective for significant prolapse| Incorrect injection can cause complications

Ksharakarma and Modern Office Procedures: Conceptual Correlation

A useful academic comparison can be made between Ksharakarma and modern office procedures based on their therapeutic philosophy.

Ksharakarma produces controlled chemical injury.

IRC produces controlled thermal injury.

Sclerotherapy produces controlled chemical/inflammatory injury through injection.

Therefore:

Controlled local injury → healing response → fibrosis → reduction/fixation of pathological tissue

However, it would be scientifically inappropriate to state that Kshara and a modern sclerosant are identical. Their chemical composition, preparation, biological effects, standardization and pharmacological characteristics differ.

Similarly, Ksharakarma should not simply be labelled as “chemical cauterization equivalent to sclerotherapy.” The comparison is useful for understanding the broad therapeutic principle but does not establish equivalence.

Role in Grade I–II Haemorrhoids

Grade I and II haemorrhoids are particularly suitable for minimally invasive approaches because significant external prolapse is absent or limited.

Contemporary guidelines recognize office procedures including sclerotherapy and IRC for symptomatic grade I–II disease, with rubber band ligation generally considered the most effective office-based treatment overall.

The choice between procedures depends upon:

- *Dominant symptom*
- *Size of haemorrhoidal tissue*
- *Degree of prolapse*
- *Number and location of haemorrhoidal columns*
- *Previous treatment*
- *Patient preference*
- *Operator expertise*
- *Availability of equipment*

- Cost

- Institutional protocol

Bleeding-predominant early haemorrhoids are particularly suitable for office procedures.

Safety Considerations

No anorectal procedure should be undertaken without adequate diagnosis.

Important precautions include:

1. Confirm that the bleeding is likely to arise from haemorrhoidal disease.
2. Consider differential diagnoses such as anal fissure, inflammatory bowel disease, colorectal neoplasia and other causes of rectal bleeding.
3. Perform appropriate anorectal examination.
4. Use anoscopy when indicated.
5. Avoid treatment of lesions that are atypical or suspicious.
6. Follow strict aseptic precautions.
7. Ensure proper anatomical localization before applying Kshara or delivering thermal energy.
8. Ensure correct injection plane during sclerotherapy.
9. Provide appropriate post-procedure instructions.

Current guidance also emphasizes that patients undergoing haemorrhoid treatment should be informed about uncommon but potentially serious complications and instructed regarding warning symptoms.

Advantages of a Comparative Approach

A comparative understanding of Ksharakarma and modern office procedures is useful for postgraduate students of Shalya Tantra because it encourages interpretation of classical surgical procedures using contemporary clinical concepts while preserving their original theoretical framework.

The comparison also demonstrates that minimally invasive management is not a new concept. Both traditional and contemporary systems have developed methods that attempt to avoid unnecessary extensive tissue excision in appropriately selected patients.

At the same time, evidence-based practice requires that traditional procedures be evaluated using appropriate clinical outcomes rather than assuming efficacy solely from historical description.

Relevant outcomes for future comparative studies could include:

- Reduction in bleeding

- Reduction in prolapse
- Reduction in pile-mass size
- Post-procedure pain
- Time to return to routine activity
- Procedure-related complications
- Recurrence
- Requirement for repeat intervention
- Patient satisfaction
- Cost-effectiveness

DISCUSSION

The treatment of haemorrhoids has gradually shifted from extensive surgical excision towards individualized management based on disease grade, symptoms and patient characteristics.

Modern office procedures such as sclerotherapy and IRC have an important role in early internal haemorrhoidal disease. Their principal attraction is that they can be performed without formal haemorrhoidectomy and generally permit rapid recovery. Contemporary evidence supports their use particularly in grade I and II disease.

Ksharakarma provides an interesting Ayurvedic parallel. Rather than removing the entire haemorrhoidal mass surgically, local Kshara application aims to produce controlled tissue destruction followed by healing. Classical Ayurvedic literature therefore presents a therapeutic concept that is compatible with the broader principle of minimally invasive intervention.

Published Ayurvedic studies have investigated Kshara in comparison with modern techniques. For example, a comparative clinical study has examined Apamarga Kshara, infrared coagulation and an Ayurvedic formulation in first- and second-degree haemorrhoids. However, interpretation of such studies requires caution. Differences in study design, sample size, outcome definitions, procedural technique and follow-up duration can make direct comparison difficult.

Similarly, contemporary literature suggests that IRC may be effective for early haemorrhoidal disease but may have diminishing effectiveness as prolapse increases.

Therefore, the future of research should not merely compare whether one procedure is “better” than another. Instead, studies should determine which procedure is most appropriate for which patient and which symptom profile.

For example, a patient with grade I haemorrhoids presenting predominantly with bleeding may be an appropriate candidate for an office procedure. A patient with significant grade III–IV prolapse requires a different treatment strategy. Current guidelines generally reserve more extensive surgical treatment for advanced or prolapsing disease.

From an Ayurvedic research perspective, Ksharakarma would benefit from standardized documentation of Kshara preparation, pH/alkalinity where relevant, application time, anatomical site, procedural protocol, pain assessment, bleeding assessment, wound healing and recurrence.

Limitations

This article is a narrative review and does not constitute a systematic review or meta-analysis. The available literature differs considerably in methodology. Direct head-to-head evidence comparing Ksharakarma, IRC and sclerotherapy is limited. Furthermore, classical Ayurvedic descriptions and contemporary biomedical terminology are based on different conceptual frameworks, and direct one-to-one equivalence should therefore be avoided.

Future randomized controlled studies with standardized protocols, validated outcome measures and adequate follow-up are required to establish comparative effectiveness.

Future Research Perspectives

Future research in this area should focus on:

1. Standardization of Pratisaraneeya Kshara preparation.
2. Standardization of application technique and duration.
3. Objective measurement of pile-mass reduction.
4. Standardized pain assessment.
5. Quantification of bleeding.
6. Long-term recurrence assessment.
7. Comparative randomized trials with IRC and sclerotherapy.
8. Cost-effectiveness analysis.
9. Patient-reported outcome measures.
10. Assessment of quality of life following treatment.

Such studies could help establish an evidence-based position for Ksharakarma within contemporary anorectic practice.

CONCLUSION

Grade I–II haemorrhoids can frequently be managed without conventional excisional surgery when appropriate patient selection is made. Infrared coagulation and injection sclerotherapy are established office-based procedures that act through controlled tissue injury followed by coagulation, inflammation and fibrosis.

Ksharakarma represents an important Ayurvedic parasurgical approach in the management of Arsha. Although it should not be considered chemically or technically identical to modern sclerotherapy or infrared coagulation, all three modalities share the broad therapeutic concept of producing a controlled local response to reduce pathological haemorrhoidal tissue and improve symptoms.

For the Shalya Tantra surgeon, understanding these similarities and differences provides an opportunity to integrate classical surgical principles with contemporary evidence-based practice. Further well-designed comparative clinical trials are required before definitive conclusions regarding relative efficacy, safety and recurrence can be drawn.

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