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## The Impact of Intralesional 5-Fluorouracil in the Treatment of Keloid Scars

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## Background

- The American Academy of Dermatology (AAD) defines a keloid scar as a type of raised scar extending past the initial area of injury<sup>1</sup>
- Approximately 10% of the general population affected - significant risk factors include +family history, darker skin tones, mechanism of injury (burn, surgical)<sup>3</sup>
- Symptom presentation: pain, pruritus, burning, increased sensitivity<sup>3</sup>
- Varying existing treatment methods with high resistance and recurrence rates leading to no agreed upon standard approach<sup>5</sup>
  - Most widely adopted method currently : **intralesional (ILS) steroid injection<sup>5</sup>**

**Purpose:** Audit the available data on the efficacy of intralesional 5-fluorouracil (ILS 5-FU) in the treatment of keloids and whether its use should become more mainstream and/or perhaps a standard of care

## Methodologies

- **Databases:** PubMed, Google Scholar
- **Search Terms:** keloid, keloid treatment, efficacy, 5-fluorouracil/5-FU, intralesional steroid, triamcinolone
- A manual title/abstract review with subsequent full-text review was performed to yield a total of **4 articles**
- **Journals:** Journal of Plastic, Reconstructive, and Aesthetic Surgery, World Journal of Plastic Surgery, Burns, Archives of Dermatological Research

**Inclusion Criteria** : 2018 – present, adult population (all races, ages, genders) with at least 1 keloid scar undergoing treatment with ILS 5-FU

**Exclusion Criteria** : Full text unavailable, not in English, studies focused on efficacy of dosing schedules/injection strengths of 5-FU

## Findings

### Level of Evidence:

- Small sample sizes (49-108 keloids)
- 3 Randomized control trials
- 1 randomized parallel group study

### Limitations:

- Small sample sizes
- Varying treatment groups (5-FU, TMC, 5-FU+TMC, BTX-A)
- Injection technique
- Different measurement outcomes (POSAS vs VSS)

Study	Treatment Groups	Outcome
Hietanen et al	5-FU v. TMC (ILS)	<b>Similar</b> rates of remission (not statistically significant)
Srivastava et al	5-FU v. TMC v 5-FU + TMC (ILS)	<b>ILS 5-FU + ILS TMC</b>
Khalid et al	TMC v 5-FU + TMC (ILS)	<b>ILS 5-FU + ILS TMC</b>
Ismail et al	5-FU v BTX-A (ILS)	<b>ILS BTX-A</b>

- Local side effects
  - Telangiectasia – Risk **INCREASED** in TMC groups
  - Skin atrophy – Risk **INCREASED** in TMC groups
  - Skin ulceration – Risk **INCREASED** in 5-FU group

## Conclusion

- Intralesional 5-fluorouracil is efficacious in treating keloid scars, both in size and symptom reduction
- The most impressive results were seen in keloids injected with a combination of **ILS 5-FU and ILS steroid (TMC)**

### Further Research:

- Larger scale studies comparing ILS 5-FU, ILS TMC, and Botox efficacy in treating keloids
- Specific injection dosages/ratios of 5-FU: TMC
- Injection schedules that most effectively treat keloid scars

## Clinical Relevance

ILS 5-Fluorouracil should be considered as part of the standard approach of all keloid treatments, without specific 5-FU drug contraindications, in order to see the most potent results and minimal adverse effects

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