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Research Article

Ear Packing Vs. Standard Drops in Otitis Externa: Superior Outcomes in Obstructed Cases

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Abstract

Background: Otitis externa (OE) is a common condition often treated with topical antibiotics and corticosteroids. However, the effectiveness of ear drops can be limited in cases involving canal obstruction, poor patient compliance, or anatomical variations that hinder proper medication delivery. There is a growing interest in alternative delivery methods that ensure more consistent drug application and faster symptom resolution. *Objective*: To compare the efficacy of hydrocortisone-oxytetracycline ear packing using Hydrocyclin® ointment with Paroticin® ear drops in treating uncomplicated and obstructed otitis externa (OE). *Methods*: A prospective cohort study of 200 patients was conducted. Patients were allocated into packing (n=100) and drops (n=100) groups. Outcomes included clinical resolution, pain reduction, and analgesic use. *Results*: For uncomplicated OE, packing achieved 100% resolution by Day 6, versus 70% with drops by Day 7 ($p<0.001$). In obstructed canals, packing resolved 100% by Day 6 versus 35% with drops ($p<0.001$). Pain reduction was faster with packing, with 80% reduction by 48 hours compared to 45% in the drops group ($p<0.001$). Analgesic use decreased more rapidly in the packing group. *Conclusion*: Hydrocortisone-oxytetracycline ear packing demonstrates superior clinical outcomes compared to standard ear drop therapy, particularly in cases of canal obstruction. Packing ensures more consistent drug delivery, better symptom relief, and faster recovery. This method also improves clinician control over treatment administration and may benefit patients with impaired compliance or anatomical challenges.

Keywords

Otitis Externa, Ear Packing, Hydrocortisone, Oxytetracycline, Hydrocyclin, Paroticin, Ear Drops, Canal Obstruction

1. Introduction

Otitis externa (OE) refers to an inflammatory condition of the skin lining the external auditory canal, typically characterized by swelling (edema) and redness (erythema) [1]. It is a prevalent and painful disorder encountered frequently in otolaryngology clinics, manifesting either diffusely or locally within the canal [2]. Due to the tight adherence of the canal skin to the underlying cartilage and bone, any inflammation often results in significant pain [3].

The clinical diagnosis of OE is primarily based on typically presenting symptoms such as earache, itching, discharge, and

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sometimes hearing loss. Physical examination includes inspection of the auricle, assessment of regional lymph nodes, and otoscopic evaluation of the ear canal [4]. Tenderness upon manipulation of the tragus or pinna remains a hallmark finding [5].

Several factors predispose individuals to OE, including a warm and humid environment, frequent ear cleaning, and exposure to water activities, particularly swimming [6]. The major pathogens implicated are Staphylococcus aureus and Pseudomonas aeruginosa [7], although microbial involvement is not universal [8].

Effective management focuses on pain relief, reducing inflammation, and treating any underlying infection. Topical therapies, especially combinations of antibiotics and corticosteroids, are preferred for their ability to directly target the site of infection and inflammation while minimizing systemic side effects [9]. While ear drops remain a common form of delivery, their effectiveness can be compromised by anatomical barriers, canal swelling, or nonadherence [10]. An alternative approach that is increasingly utilized in practice involves medicated ear packing, which offers mechanical support to the edematous canal and improves drug delivery [11]. It also facilitates direct observation and cleaning during follow-up visits, which may enhance outcomes in severe or unresponsive cases.

In this study, we compared clinician-administered hydrocortisone-oxytetracycline ear packing (Hydrocyclin® ointment) with patient-administered Paroticin® ear drops in the management of uncomplicated and obstructed otitis externa. Hydrocyclin® was selected for its combination of hydrocortisone and oxytetracycline, offering dual anti-inflammatory and broad-spectrum antibacterial effects. Paroticin® represents a commonly used, multi-agent ear drop regimen in clinical practice, making it an appropriate comparator for standard topical OE therapy.

2. Materials and Methods

2.1. Study Design and Participants

A prospective cohort study was conducted at RINO Clinic, Ferizaj, Republic of Kosovo, between July and August 2024. A total of 200 patients diagnosed with uncomplicated otitis externa or obstructed external auditory canals were included after obtaining informed consent. A formal power analysis was not performed prior to the study with no withdrawals or loss to follow-up. However, the sample size of 100 patients per group was based on clinical feasibility and prior OE studies indicating that such cohort sizes are sufficient to detect significant differences in treatment response.

2.2. Inclusion and Exclusion Criteria

Inclusion criteria were: patients aged 16 to 50 years with clinically diagnosed uncomplicated OE or obstructed canals. Exclusion criteria included recurrent OE, diabetes mellitus, immunosuppression, known allergies to study medications, and refusal to participate.

2.3. Intervention

The packing group received sterile gauze impregnated with Hydrocyclin® ointment (hydrocortisone 1%, oxytetracycline 3%) inserted under otomicroscopy, replaced every 48 hours for up to 6 days. The drops group received Paroticin® (fludrocortisone acetate 0.1%, polymyxin B sulfate 10,000 units/mL, lidocaine hydrochloride 2%), administered as four drops four times daily for 7 days.

2.4. Outcome Measures

Primary outcome was clinical resolution (complete symptom resolution and normalization of canal appearance). Secondary outcomes included pain reduction (assessed using a Visual Analog Scale [VAS]) and decrease in analgesic use.

2.5. Statistical Analysis

An a priori power analysis ($\alpha = 0.05$, $\beta = 0.20$, effect size = 0.5) indicated a minimum requirement of 64 patients per group. To account for potential attrition, we enrolled 100 patients per group. Data were analyzed using SPSS version 28. Categorical variables were compared using Chi-square tests. Continuous variables were compared using independent and paired t-tests. Pain progression was analyzed using repeated measures ANOVA with Bonferroni correction. Statistical significance was set at $p<0.05$.

3. Results

3.1. Baseline Characteristics

All 200 enrolled patients completed the study. No cases of dropout or loss to follow-up were recorded, ensuring full protocol adherence.

3.2. Clinical Resolution

Among patients with uncomplicated OE (n=130), 100% resolution was achieved by Day 6 in the packing group (n=65), compared to 70% by Day 7 in the drops group (n=65) ($p<0.001$). In the subgroup with obstructed canals (n=70), packing achieved 100% resolution by Day 6 (n=35), whereas only 35% of those treated with drops (n=35) reached resolution by Day 7 ($p<0.001$).

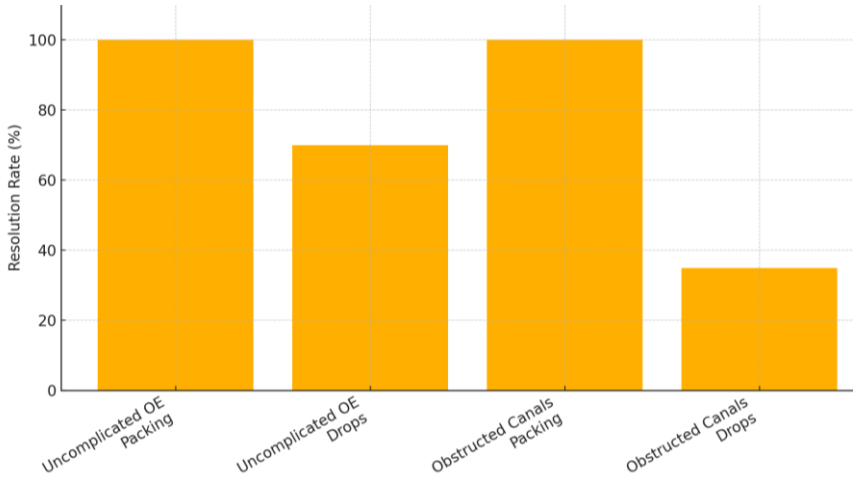

Figure 1. *Clinical Resolution in Uncomplicated vs. Obstructed OE: Packing vs. Drops.*

Table 1. *Resolution Rates by Treatment Group, Stratified by OE Type (Uncomplicated vs. Obstructed).*

Cohort	Treatment	Resolution Rate	Time to Resolution
Uncomplicated OE	Packing (n=65)	100%	6 days
Uncomplicated OE	Drops (n=65)	70%	7 days
Obstructed Canals	Packing (n=35)	100%	6 days
Obstructed Canals	Drops (n=35)	35%	7 days

3.3. Pain and Analgesic Use

Patients in the packing group reported significantly faster pain reduction, with an 80% decrease in VAS scores by 48 hours compared to 45% in the drops group ($p<0.001$). Analgesic use declined more rapidly in the packing group, with most patients discontinuing analgesics within 3 days. This suggests improved early symptom control with packing, reducing reliance on systemic medications and potentially enhancing patient comfort during the acute recovery phase.

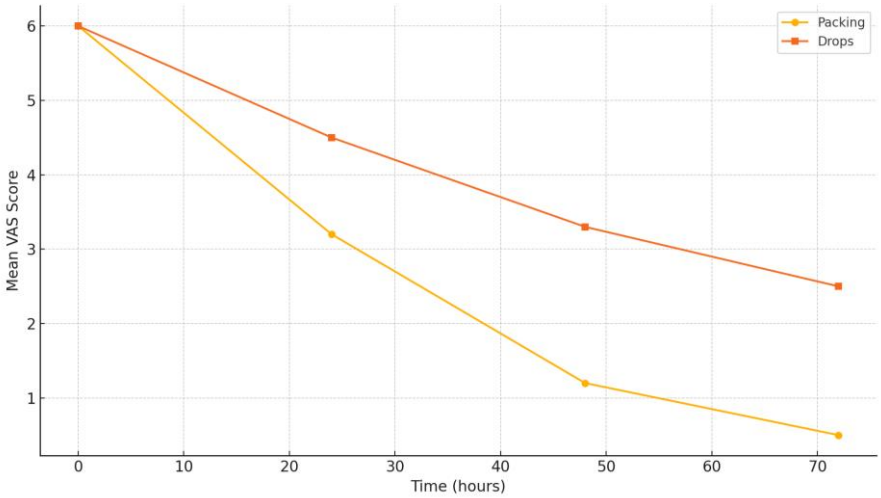

Figure 2. *Mean Pain Reduction (VAS) by Treatment Group.*

3.4. Patient Comfort

Most patients (82.5%) reported that the packing procedure was comfortable, with transient discomfort noted in a minority.

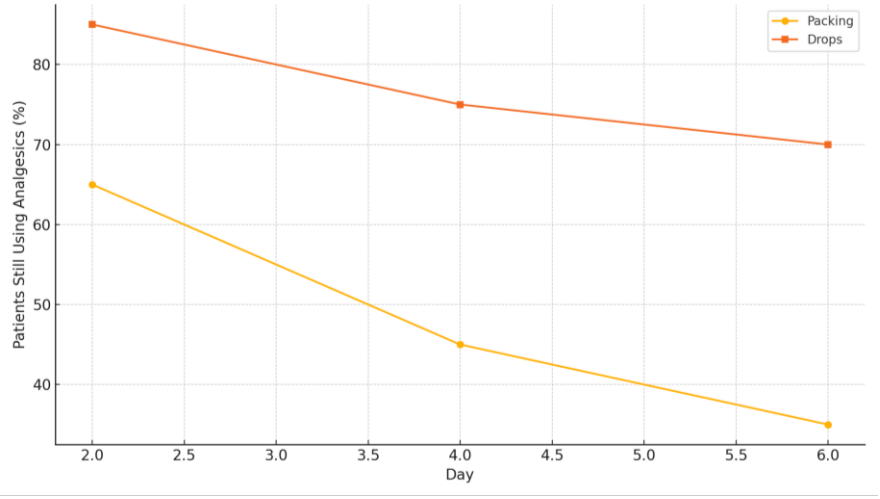

Figure 3. *Simulated Mean Analgesic Use Over Time.*

4. Discussion

Otitis externa remains a significant cause of morbidity, often disrupting daily activities due to intense otalgia [1]. The primary goals in management are to alleviate pain, reduce inflammation, clear infection, and restore canal patency. Topical therapy, preferably combining an antibiotic with a corticosteroid, remains the cornerstone of treatment due to its localized high concentration and minimal systemic absorption [9].

Our findings indicate that hydrocortisone-oxytetracycline packing offers superior outcomes compared to conventional drop therapy. Packing provides an occlusive environment that promotes humidity within the canal, which may enhance healing [11]. Additionally, ointment formulations lack preservatives, reducing the risk of hypersensitivity reactions sometimes observed with ear drops [12]. In edematous canals where drops may fail to penetrate effectively, medicated wicks ensure consistent drug delivery [13].

Patients treated with packing demonstrated faster and more complete resolution of both uncomplicated and obstructed OE. Pain reduction occurred more rapidly, and analgesic requirements decreased sooner than in the drops group. These results align with previous observations suggesting that medicated ear wicks are particularly advantageous in cases where canal obstruction impedes drop efficacy [14].

Despite the strengths of this study, including its prospective design and clear outcome measures, limitations must be acknowledged. Being a single-center study with non-randomized group allocation introduces potential bias. Nevertheless, the significant differences observed support the superiority and reliability of clinician-administered packing in managing acute otitis externa.

Overall, our results advocate for the broader adoption of medicated ear packing, particularly in cases where canal obstruction and severe inflammation limit the effectiveness of ear drops. From a pharmacologic standpoint, the therapeutic superiority of the packing method may also relate to the specific agents used. Hydrocortisone, a well-established corticosteroid, exerts strong anti-inflammatory effects by downregulating cytokine release and capillary permeability. Oxytetracycline, a bacteriostatic antibiotic, inhibits bacterial protein synthesis and offers broad-spectrum coverage, including common OE pathogens such as Pseudomonas aeruginosa and Staphylococcus aureus [10, 15]. In contrast, the drops used in this study contained fludrocortisone, polymyxin B, and lidocaine. While fludrocortisone possesses anti-inflammatory activity, it may be less potent in topical ENT applications than hydrocortisone. Polymyxin B, though effective against gram-negative organisms, lacks the broad-spectrum efficacy of oxytetracycline. Lidocaine offers symptomatic relief through local anesthesia but does not address the underlying inflammation or infection. These differences in formulation likely contributed to the observed disparity in treatment response between groups. Moreover, ointment-based delivery in packing ensures prolonged drug contact, consistent absorption, and is less affected by canal edema than drops. aken together, both pharmacodynamic and mechanical factors may explain the improved outcomes seen with hydrocortisone-oxytetracycline packing, especially in moderate-to-severe presentations. This study was limited by its short follow-up duration, which precluded assessment of long-term recurrence or residual symptoms. Future studies should incorporate longitudinal tracking to evaluate sustained efficacy, relapse rates, and patient-reported outcomes.

5. Conclusions

Our study demonstrates that hydrocortisone-oxytetracycline ear packing provides faster symptom relief, higher clinical resolution rates, and reduced reliance on analgesics compared to traditional ear drop therapy in treating otitis externa. The mechanical and pharmacological benefits of medicated packing make it an especially valuable treatment strategy, particularly in cases complicated by canal obstruction. Broader clinical adoption of packing techniques could enhance patient outcomes in acute otitis externa management. Future research should further examine long-term recurrence rates and patient-reported quality-of-life outcomes following packing versus drops in real-world settings.

Abbreviations

OE	Otitis Externa
VAS	Visual Analog Scale

Author Contributions

Rinor Ajeti: Conceptualization, Study Design, Data Analysis, Writing – Original Draft

Afrim Ajeti: Data Collection, Methodology, Supervision.

Vesna Petreska Dukovska: Statistical Analysis, Manuscript Review, Validation

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Data Availability Statement

The data supporting the findings of this study are available from the corresponding author upon reasonable request.

Conflicts of Interest

The authors declare no conflicts of interest.

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