

Study on the Conservation and Restoration of Localized Deterioration in Qianlong's West Lake Handscroll

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Abstract

Qianlong's West Lake Handscroll is a Qing dynasty court painting with significant artistic value and importance for the study of traditional mounting techniques. During long-term storage and use, localized deterioration occurred in the mounting structure, particularly in the brocade roller cover, mounting silk borders, and edge sections, including delamination, creasing, blistering, abrasion, and tearing, which affected the structural stability and exhibition safety of the artifact. Based on conservation and restoration practice, this study analyzes the characteristics, causes, and treatment methods of these deteriorations. The restoration process followed the principles of "minimal intervention" and "retaining the original appearance," while preserving the original mounting structure as much as possible. Traditional restoration techniques, including starch-paste readhesion, reinforcement with xuan paper strips, and local flattening treatment, were employed to address issues such as blistering of the roller cover, delamination of mounting silk borders, and fold-related tears. After restoration, the structural stability of the artifact was significantly improved. The roller cover and mounting borders regained their flatness, while localized delamination and tears were effectively stabilized, allowing the handscroll to meet the requirements for safe preservation and exhibition. The study suggests that localized conservation treatment not only effectively prolongs the preservation life of handscroll paintings, but also contributes to a deeper understanding of the structural characteristics and material technologies of traditional imperial mounting techniques. This case study may provide practical reference for the conservation and restoration of similar mounted painting artifacts.

Keywords: painting and calligraphy conservation; handscroll mounting; localized restoration; roller cover; traditional restoration techniques; Qing dynasty court painting

1 Introduction

Traditional paintings and calligraphy artifacts often develop various forms of deterioration during long-term storage and handling due to material aging, environmental fluctuations, and structural relaxation of mounting layers. Among these, abrasion, delamination, creasing, and losses occurring in mounting components such as roller covers, silk borders, and edge sections are particularly common [1–3]. Although these forms of deterioration are often localized, improper treatment may further compromise the structural stability and exhibition safety of the artifact.

With the development of conservation concepts, the focus of painting and calligraphy conservation has gradually shifted from treating only the painting core to comprehensively examining the entire mounting structure and material system [4]. However, existing studies mainly concentrate on large-scale remounting and complete conservation treatments, while systematic reports on localized conservation interventions remain relatively limited. In particular, the relationship between mounting structures and material conditions still requires further investigation through practical conservation cases.

This study takes the Qing dynasty *Qianlong's West Lake Handscroll* as a case study. Through an analysis of its deterioration characteristics and conservation treatment, the paper summarizes the corresponding restoration methods and aims to provide reference for the conservation of similar mounted painting artifacts.

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2 Overview and Value Characteristics of the Artifact

Qianlong's West Lake Handscroll (Collection No. 故 00237013) is a Qing dynasty court painting measuring 91.4 cm × 29 cm. The work depicts West Lake scenery painted by the Qianlong Emperor (Hongli) himself and includes imperial inscriptions. It possesses both artistic and historical significance and serves as an important material example for the study of Qing court painting and imperial mounting techniques.

From the perspective of artistic content, the work reflects the imperial appreciation of Jiangnan landscapes during the Qianlong period and embodies the tradition of integrating painting, calligraphy, and inscriptions in Qing court art. The inscriptions also provide valuable evidence for the study of court cultural activities during the Qing dynasty.

Structurally, the handscroll preserves a relatively complete traditional mounting system, including the wrapping cloth, jade fastener, roller cover, mounting silk borders, and edge sections. The roller cover is of particular interest because it contains a thick backing paper and reinforced side strips, a relatively uncommon feature in traditional mounting practice. This structure reflects the sophisticated technical treatment of heavy textile components in imperial mounting craftsmanship.

Therefore, the artifact possesses not only artistic and historical value but also considerable significance for the study of traditional Chinese mounting structures and materials. During conservation treatment, it was necessary to preserve the integrity of the pictorial content, mounting structure, and historical craftsmanship simultaneously.



Figure 1. Overall condition of *Qianlong's West Lake Handscroll* before conservation treatment.

3 Current Condition and Deterioration Mechanism Analysis

Before treatment, the overall condition of the artifact was relatively stable, but significant deterioration was observed in localized mounting areas, particularly in the roller cover, mounting silk borders, and edge sections.

The specific deterioration included slight losses in the textile around the label area of the wrapping cloth; severe abrasion, water staining, creasing, fading, and extensive delamination in the roller cover; and large areas of blistering. Two labels remained attached to the roller cover surface. The mounting silk borders on both sides exhibited severe creases, delamination, abrasion, ink stains, and red stains. The edge sections suffered extensive

delamination and cracking. Black and white stains were observed on the painting core, while the Qianlong inscription area contained stains, adhered foreign matter, and tears at the upper edge.

The causes of deterioration were complex and related to both environmental and structural factors. First, repeated rolling and unrolling during long-term use subjected the mounting structure to continuous mechanical stress, especially in the roller cover and silk border areas, resulting in structural fatigue and fold formation. Second, fluctuations in humidity caused repeated expansion and contraction of paper and textile materials, gradually weakening the adhesive strength of the starch paste and leading to delamination and blistering.

In addition, the roller cover was structurally thick due to the heavy backing paper, while the original supporting paper was relatively thin. After prolonged exposure to moisture, the structure lost stability, further aggravating blistering and deformation. Surface stains and discoloration were mainly caused by water damage and the accumulation of environmental contaminants. Although the deterioration was concentrated in localized mounting areas, it had already affected the structural stability and exhibition safety of the handscroll.



Figure 2. Delamination and severe creasing in the roller cover area.

4 Conservation Treatment

4.1 Conservation Principles and Technical Approach

Based on the condition assessment, the treatment was defined as a localized conservation intervention rather than a complete remounting. The treatment focused mainly on the roller cover, mounting silk borders, edge sections, and localized tears.

The treatment followed the principle of minimal intervention, aiming to preserve original materials and historical information while restoring structural stability and rolling functionality. The principle of “repairing the old as old” was also observed to ensure consistency with the original mounting style and material characteristics.

Technically, the treatment focused on three key issues: restoring adhesion in the roller cover and silk border areas, reinforcing folds and tears to improve structural strength, and

improving overall flatness without altering the original mounting structure.

4.2 Selection of Conservation Materials

Traditional Chinese conservation materials were employed, including *xuan* paper, starch paste, and pigments.

Xuan paper was used for reinforcing folds and tears because of its flexibility and compatibility with the original materials. Starch paste served as the primary adhesive due to its reversibility and long-term stability, making it suitable for traditional painting conservation. Small amounts of pigments were also applied for visual integration of repaired areas.

4.3 Key Conservation Procedures

The treatment of the roller cover was the most technically demanding aspect of the restoration. Because of the extensive blistering and thick structure, the roller cover and upper mounting section first had to be partially separated. Diluted starch paste was then brushed onto the backing area to gradually restore adhesion. The blistered sections were carefully readhered and flattened under controlled pressure. After stabilization, excess material was trimmed, and the structure was tensioned and flattened on the work table.





Figure 3. Opening and readhering treatment of the roller cover.

For the creased and delaminated silk borders and edge sections, localized humidification was first applied to soften the fibers. Fine tools were then used to unfold and realign the distorted areas. Starch paste was injected into delaminated sections, and *xuan* paper strips were applied to the reverse side for reinforcement.



Figure 4. Reinforcement of folded areas with *xuan* paper strips.

Localized tears in the inscription area were stabilized through small-scale reinforcement and flattening treatment while minimizing interference with the original written content. Throughout the process, moisture levels and operational force were strictly controlled to avoid water stains, deformation, or secondary damage.

5 Restoration Results and Conservation Insights

After treatment, the structural stability of the artifact improved significantly. The severe blistering and delamination in the roller cover were effectively resolved, while the mounting silk borders and edge sections regained flatness. Structural reinforcement successfully stabilized the folds and tears, allowing the handscroll to meet the requirements for safe rolling and exhibition.

The roller cover adhered firmly after treatment, and deformation was substantially reduced. The creased silk borders regained flatness through front-side paste filling and reverse-side reinforcement. Cracks in the edge sections were stabilized, and the mounting structure became visually coherent overall. No obvious water stains or secondary contamination occurred during treatment, and restoration traces remained visually unobtrusive.



Figure 5. Overall appearance after conservation treatment.

The conservation process also revealed distinctive structural features of Qing imperial mounting techniques. The thick backing paper and reinforced side strips used in the roller cover demonstrate sophisticated technical solutions for handling heavy textile structures in palace mounting practice.

However, although the roller cover gained structural strength after humidification and paste treatment, its flexibility decreased slightly compared with its pre-treatment condition. This suggests that future treatments of similar thick mounting structures should carefully balance structural reinforcement and material flexibility.

6 Conclusion

This study analyzed the localized deterioration and conservation treatment of *Qianlong's West Lake Handscroll* and summarized typical issues encountered in the localized conservation of mounted handscroll paintings. The results demonstrate that traditional techniques such as starch-paste readhesion, reinforcement with *xuan* paper strips, and localized flattening can effectively restore the structural stability and display function of mounted paintings without altering their original mounting structures.

The treatment not only improved the preservation condition of the artifact but also revealed important technical characteristics of Qing imperial mounting craftsmanship, particularly in the treatment of thick roller-cover structures. These findings provide valuable material evidence for the study of traditional mounting technologies.

For long-term preservation, environmental stability should remain a priority. It is recommended that storage temperatures be maintained between 17–20 °C with daily fluctuations not exceeding 2–5 °C, while relative humidity should remain between 45%–60%RH with daily fluctuations below 5%. Direct sunlight and excessive illumination should be avoided, and exhibition lighting should remain below 50 lux. Excessive rolling and handling should also be minimized to reduce mechanical stress on the mounting structure.

Overall, this case study provides a practical reference for the localized conservation of mounted handscroll paintings and further demonstrates the importance of small-scale conservation interventions in understanding traditional mounting structures and material technologies.

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